# JOINT OPERATIONS IN THE ELECTROMAGNETIC BATTLESPACE

**JOINT STAFF
WASHINGTON, D.C. 20318**

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# CHAIRMAN OF THE JOINT CHIEFS OF STAFF MANUAL

JOINT OPERATIONS IN THE ELECTROMAGNETIC BATTLESPACE
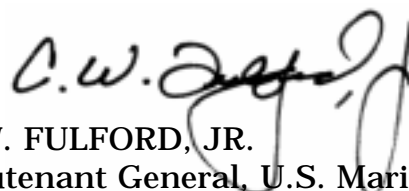
References: See Appendix G.

1. <u>Purpose</u>. To standardize techniques and procedures for planning, coordinating, and controlling spectrum use in joint operations.

2. <u>Cancellation</u>. CJCSM 3220.01, 10 October 1997 is canceled.

3. <u>Applicability</u>. This publication applies to all joint tasks force (JTF) operations and provides planners, decision makers, and spectrum users with operation and planning guidance.

4. <u>Procedures</u>. Controlling the electromagnetic battlespace (EMB) is key to successful military operations. This publication will guide the JTF establishing authority, the Joint Force Commander (JFC) and staff, and subordinate commanders and staff in planning, coordinating, and controlling the EMB.

5. <u>Summary</u>. The objective of this document is to provide guidance on tactics, techniques, and procedures for planning, coordinating, and controlling use of the EMB in a JTF environment. Information and procedures contained herein will standardize EMB spectrum operations for JTFs. This document has been updated as an administrative annual review and CJCSM 3220.01 has been changed to CJCSM 3320.01 to align with other spectrum management,

Chairman of the Joint Chiefs of Staff (CJCS) instructions and manuals.  Changes and or updates have been made in Chapter 3, Planning, 10-14; Appendixes A, Automated Tools; Appendix C, Support Agencies and Information Sources; Appendix D, Annex C, Sample Spectrum Management Appendix; Appendix D, Annex D, CINC POC's and AOR's; and Appendix F, Coalition Operations.  All CINCs, Services, and appropriate sgencies have concurred, some with comment.  All comments/recommendations have been incorporated into the manual

6.  Releasability.  This manual is approved for public release; distribution is unlimited.  DOD components (to include the combatant commands), other Federal agencies, and the public may obtain copies of this instruction/ manual/notice through the Internet from the CJCS Directives Home Page--http://www.dtic.mil/doctrine.  Copies are also available through the Government Printing Office on the Joint Electronic Library CD-ROM.

7.  Effective Date. This manual is effective upon receipt.

For the Chairman of the Joint Chiefs of Staff:


C.W. FULFORD, JR.
Lieutenant General, U.S. Marine Corps
Director, Joint Staff

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SECTION I

PREFACE

1. <u>Purpose</u>.  This publication provides guidance on tactics, techniques, and procedures for planning, coordinating, and controlling use of the electromagnetic Battlespace (EMB) in a joint task force (JTF) environment.  Information and procedures contained herein will standardize EMB spectrum operations for JTFs.

2. <u>Scope</u>

   a.  Command and control (C2) of military forces across global distances and expanded areas of operation (AOs) demand a continuous flow of information. Information flow in the highly mobile military operating environment depends heavily upon controlling and exploiting the use of the electromagnetic spectrum throughout the range of military operations.  The guidance contained herein is based on the concept that effective and efficient spectrum use and management are attained through the principles of planning, coordination, and control.

   b.  The effective use and control of the spectrum is critical to the national security in terms of Information Operations (IO) and combat operations in terms of Command and Control Warfare (C2W).  Effective spectrum management (the organized control and use of the electromagnetic spectrum) is a building block of defensive Information Operations (IO) and C2 Protect to ensure that necessary operations can be conducted with minimal unintentional interference (fratricide) and without electromagnetic environmental effects (E3) to ordnance.  The rapid growth of sophisticated weapons systems, as well as intelligence, operations and communications systems will increase demand for frequencies that, if not coordinated and carefully preplanned, will have an adverse effect upon friendly but competing users.  Operations must also consider the needs of all forces in future contingencies.  Therefore, an effective spectrum management structure is required not only to satisfy the spectrum needs of military users, but also to coordinate with host nations to facilitate effective use of this finite resource.

   c.  The diffusion of spectrum use throughout enemy, host-nation, United Nations (UN), allied, and coalition forces, as well as by US forces, dictates that spectrum-use planning for a military operation be timely, thorough, and comprehensive.  Electromagnetic wave propagation does not stop at arbitrary boundaries, such as areas of responsibility (AOR's), theaters, and so forth. Therefore, coordination with all friendly and neutral parties vulnerable to electromagnetic interference (EMI) is essential.  Such coordination will ensure

that friendly emissions do not conflict with, and that unacceptable EMI does not adversely affect contemplated operations.

    d.  Ultimately, total control of the EMB is the key to successful military operations.  The ultimate goal of spectrum-use planning and management is to control the spectrum so that it is available and serves the information needs of US, UN, allied, and/or coalition forces and to deny the enemy the use of the spectrum so that he is unable to command, control, or otherwise employ his forces effectively.  Implementing this concept requires a central authority to ensure the effective use of the spectrum by friendly forces while integrating other actions that deny spectrum use to adversary forces.  The J-6 Joint Frequency Management Office (JFMO) is the focus of this central authority.[1]

3.    Applicability

    a.  This publication provides planners, decision makers, and spectrum users with joint spectrum management guidance when the JTF is the selected command organization.  The publication is intended to aid and guide the JTF establishing authority, JTF commanders and staffs, and JTF component commanders and staffs in planning, coordinating, and controlling use of the EMB in the JTF operating environment.

    b.  Use of the electromagnetic spectrum is pervasive in military operations and in all-functional areas and echelons of command, often in competing ways. Therefore, an effective spectrum management structure is necessary not only to satisfy the spectrum needs of military users, but also to coordinate with host nations to facilitate effective employment of this finite resource.  The selection of a command organization to execute a contingency operation or crisis action depends primarily on the mission to be accomplished and the objectives to be attained.  The use of a JTF is considered the most appropriate for short-notice, time-sensitive, contingency, crisis action, or special operations (relief, evacuation) expected to be of limited duration.

4.    Implementation Plan.  This CJCSM defines the guidelines and procedures established by CJCSI 3220.01, Electromagnetic Spectrum Use in Joint Military Operations.  It replaces Joint Publication 4.02.

    a.  This publication reflects current official Service doctrine, C2 organizations, facilities, personnel, responsibilities, and procedures.  Changes in Service protocol will be incorporated in revisions.  Significant changes requiring out-of-cycle updates will be made by interim message.

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[1] Includes the functions of the office and the tasks and actions of individuals assigned to the JFMO.

    b.  Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

SECTION II

EXECUTIVE SUMMARY

1.    <u>Joint Operations in the Electromagnetic Battlespace</u>.  Reference d details the CJCS policy on EMB in joint military operations.  This publication standardizes the implementation of that policy at the JTF.  This publication provides guidance and procedures for effecting EMB coordination and control involved in planning, deploying, employing, and redeploying a JTF.  The six chapters herein guide spectrum planners, decision-makers, and users at the commander in chief (CINC)/JTF level through the organization of a JTF.  They also outline the responsibilities associated with spectrum management.

2.    <u>Command Relationships in a Joint Task Force</u>.  Chapter 1 describes the mission requirements and organizational structure of a joint task force.  It addresses the command relationships and responsibilities of commanders and staffs associated with forming and leading a JTF.

3.    <u>Spectrum Management Relationships</u>.  Chapter 2 describes duties and responsibilities relating to spectrum management throughout the chain of command in the JTF environment.  It specifically addresses the responsibilities of the JFMO and IO cell.

4.    <u>Planning</u>.  Chapter 3 provides a discussion on how planning centers around deliberate and crisis action planning (CAP).  Other planning considerations include spectrum-use conditions, and spectrum-use planning and procedures.

5.    <u>Predeployment, Deployment, and Buildup</u>.  Chapter 4 discusses those aspects of spectrum use and management that applies to deployment and buildup of the JTF include loading, transport, and assembly of forces in the JTF AOR.  Responsibilities include finalizing initial electromagnetic spectrum requirements, assessing the electromagnetic environment, anticipating requirements for spectrum resources, and identifying, reporting, and resolving unacceptable EMI.  Tools, techniques, and procedures used during deployment and buildup are also addressed.

6.    <u>Employment</u>.  Chapter 5 describes spectrum coordination and control during employment of the JTF.  It specifically addresses the responsibilities

of the JFMO and IO cell and the tools, techniques, and procedures used during the employment phase.

7.    Redeployment.  Special spectrum management considerations associated with redeployment of the JTF are discussed in Chapter 6.  Discussion includes redeployment for disbandment and redeployment for further operations.  This chapter also addresses the tools, techniques, and procedures available to the JFMO during this phase.

8.    Conclusion.  This publication discusses the impact of the joint force commander's (JFC) decision on the employment of spectrum management assets to support joint operations.  It covers the fundamental structural elements of spectrum management.  It discusses the guidelines, basic tenets, and process for spectrum managers to use in planning for the support of joint operations.  It covers JTF spectrum planning and operational considerations as they relate to the phases of a JTF operation. Finally, this publication describes major related spectrum management systems and organizations.

SECTION III

1.    Introduction.  Joint doctrine states the JFC authorizes and controls use of the spectrum resource by military forces under his command.  The JTF, which may consist of assigned or attached elements of the Army, Navy, Marine Corps, Coast Guard, and Air Force, is constituted and so designated by the Secretary of Defense, by a commander in chief (CINC), or by the commander of a subordinate unified command or existing JTFs.

2.    Information Flow.  A continuous flow of information is required for C2 of military forces across global distances and expanded AO.  Timely, accurate, and relevant information flow in the highly mobile military operating environment is essential to controlling and exploiting use of the EMB throughout the range of military operations.

3.    Spectrum Management.  The complexity and vast distances involved in joint warfighting make control and management of the electromagnetic spectrum a crucial factor in the JFC's ability to influence decisive action.

     a.  The horizontal and vertical flow of information between adjacent and subordinate commands is equally critical during mission execution and demands continuous and uninterrupted access to the electromagnetic spectrum to support highly mobile, fast-moving operations.  The JFC ensures that this information flow exists through the comprehensive management of the electromagnetic spectrum.

     b.  Management of the EMB is fundamental to the art of warfare.  Spectrum and its use are the foundation for electrical, electronic, and electromagnetic communications. Frequency resources are governed by international law as national resources.  Frequency assets must be coordinated and deconflicted on a continuous basis at strategic, operational, and tactical levels via a variety of national and international technical and political channels.

     c.  During crisis or wartime operations, the JFC employs C2W (a subset of IO) to control and dominate the EMB while denying this capability to the enemy.  Close and continuous coordination between frequency managers and IO and command, control, communications, and computers (C4) system planners is crucial to ensure continuous and uninterrupted access to the electromagnetic spectrum.

4.    <u>Spectrum-Use Conflicts</u>.  To ensure critical frequencies and C2 nodes are protected from unintentional interference due to friendly jamming operations, the J-6 coordinates, publishes, and distributes a Joint Restricted Frequency List (JRFL) based on inputs from the J-2, J-3, and J-6.  The J-3 must approve the coordinated JRFL before its release.  This is normally accomplished as part of the IO cell.  As new requirements are identified, situations of conflicting or competing use of the spectrum will occur.  Conflicts within a primary functional area are resolved at the lowest possible level or by the JFMO.  For conflicting or competing use that effect more than one primary functional area, the IO cell examines requirements and attempts to resolve the problem in coordination with the JFMO/JSME.  If resolution is not possible at this level, the matter is elevated to the JFC or designee, usually the J-3.

5.    <u>Planning</u>

     a.  The fundamental concept of spectrum management operations is that efficient, effective spectrum use is achieved by thorough planning, coordination, and control.  The central objective of spectrum management activities is to ensure effective use of the spectrum by friendly forces while supporting actions that deny spectrum use by adversary forces.

     b.  To use the spectrum successfully, all users must work together by exchanging spectrum-use information from the beginning of the point planning process through the execution of any operation.  Automated spectrum management systems at the joint and component levels should be vertically and horizontally interoperable.

     c.  This manual addresses spectrum-use aspects in both the deliberate planning and the CAP processes, the need and purpose for establishing a joint task force spectrum management element (JSME), and the functions it performs in the planning, deployment and buildup, employment, and redeployment phases of JTF operations.  Included are:

        (1) The composition and tasks of the IO cell in the context of the close relationship the JFMO must maintain with the members of the IO cell (which includes  representatives of the JTF J-2, J-3, J-6 staffs, and the component commands).

        (2) The responsibilities of the JSME.

        (3) Spectrum-use problems that may be encountered in each phase of JTF operations.

(4) Specific guidance, techniques, and procedures are presented for:

   (a)   Effecting spectrum-use authorizations (frequency assignments and allotments).

   (b)   Developing the JTF spectrum-use plan.

   (c)   Reporting and resolving unacceptable electromagnetic interference (EMI).

   (d)   UN, allied, coalition, and host-nation spectrum-use and management considerations.

   (e)   JTF spectrum use and management under peacetime considerations.

   d.  This publication also describes the joint automated spectrum management tools available to the JTF spectrum managers.

   e.  This publication will assist the establishing authority, the commander of the joint task force (CJTF) and his staff, the JSME, and JTF component commanders and their staffs to effectively and efficiently control and use the electromagnetic Battlespace in JTF operations.

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CHAPTER 1

COMMAND RELATIONSHIPS IN A JOINT TASK FORCE

1.    Introduction.  Command is central to all military action, and unity of command is central to unity of effort.  Unity of command is the interlocking web of responsibility, which is a foundation for trust, coordination, and the teamwork necessary for unified military action.  Outlined in Figure 1-1 below are brief descriptions of duties and responsibilities, broken down by command echelon, to give the spectrum manager an overview of this unity of effort.

2.    National Command Authorities (NCA).  The NCA exercises authority and control of the armed forces through a single chain of command with two distinct branches.  The first runs from the President to the Secretary of Defense, and then directly to the commanders of combatant commands for missions and forces assigned to their commands.  The second branch is the Military Departments.  Each is organized separately and operates under the authority, direction, and control of the Secretary of Defense.

3.    Combatant Commands.  The President establishes combatant (unified or specified) commands (COCOM) for the performance of military missions and prescribes the force structure of such commands.  The commanders of combatant commands are responsible to the NCA to execute assigned missions and to accomplish the missions assigned to them.

     a. Unified Combatant Commands.  The unified combatant commanders (commonly referred to as CINCs) are responsible for the development and production of contingency plans.  During peacetime, they act to deter war and prepare for war by planning for the transition to war and military operations other than war (MOOTW).  During war, they plan and conduct campaigns and major operations to accomplish assigned missions.  They will conduct this by maintaining preparedness of the command, and  direct coordination with the subordinate commands to ensure unity of effort in all assigned missions, tasks, and responsibilities.

     b. Combatant Specified Commands.  A combatant specified commander has the same authority and responsibilities as the commander of a unified command except that no authority exists to establish subordinate commands.

4.    Military Departments.  The Secretaries of Military Departments are responsible for the administration and support of the forces assigned or attached to combatant commands.  Each of the Military Departments and Services coordinates with the other departments, Services, and combatant commands, and have the responsibility for organizing, training, equipping, and providing forces to fulfill certain specific roles, and for administering and supporting these forces.

5.    Joint Task Force (JTF).  The Secretary of Defense, the combatant commander, subordinate unified commanders, or an existing JTF commander can establish a JTF. A JTF is established when the mission has a specific limited objective and does not require overall centralized control of logistics.  The mission assigned a JTF should require execution of responsibilities involving two or more Services on a significant scale and close integration of effort, or should require coordination within a subordinate area or coordination of local defense of a subordinate area.  A JTF is dissolved when the purpose for which it was created has been achieved. A sample JTF headquarters (HQ) structure is shown in Figure 1-2.

     a.    Joint Force Commander (JFC).  The JFC will provide the superior commander with recommendations on the proper employment of assigned forces and for accomplishing operational missions assigned by the establishing commander. JFC's are also responsible to the CINC for the conduct of joint training of assigned forces.
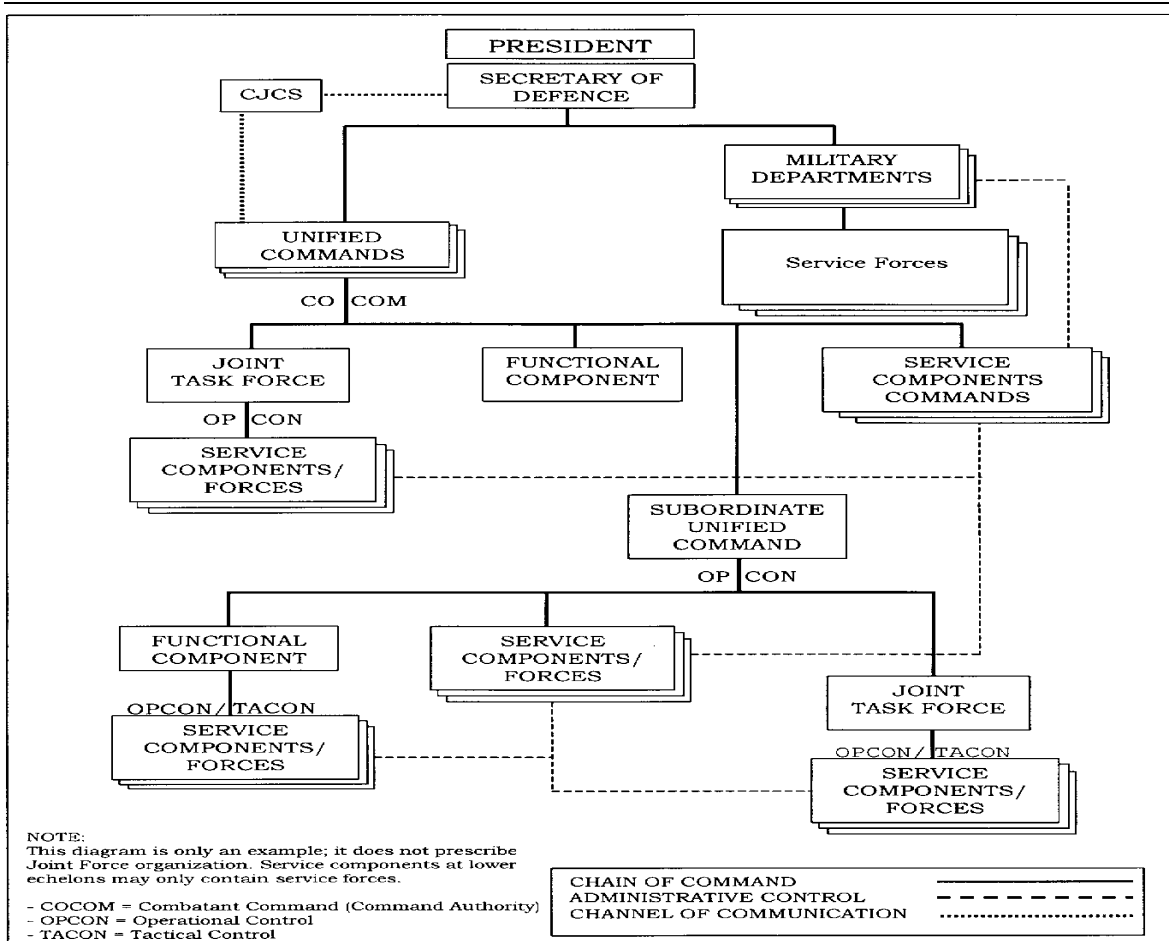
Figure 1-1.  Chain of
Command

b. Joint Task Force Staff.  The JFC may organize his joint staff as necessary to carry out his duties and responsibilities.  When mission requirements exceed the staff's capabilities (for example, qualified personnel, facilities, and equipment), assistance must be requested through the superior commander.  If the JFC is a Service component commander, he also draws from the resources of his component.

c.  Establishing the Staff.  The authority establishing the JTF should make provisions to furnish the necessary personnel, facilities, and equipment.  Composition, location, and facilities of the JTF HQ have a major influence on what the CJTF and staff can accomplish (for example, an afloat JTF HQ may have

limitations aboard certain flagships that could affect manning levels and equipment capabilities).

(1) Manpower and Personnel Division (J-1). J-1 is charged with manpower management, formulation of personnel policies, and administration of personnel of the command.

(2) Intelligence Division (J-2). The primary mission of the Intelligence Division is to ensure availability of reliable intelligence and timely warnings on the characteristics of the AO. The J-2 also ensures adequate intelligence collection and reporting to disclose enemy capabilities and intentions.
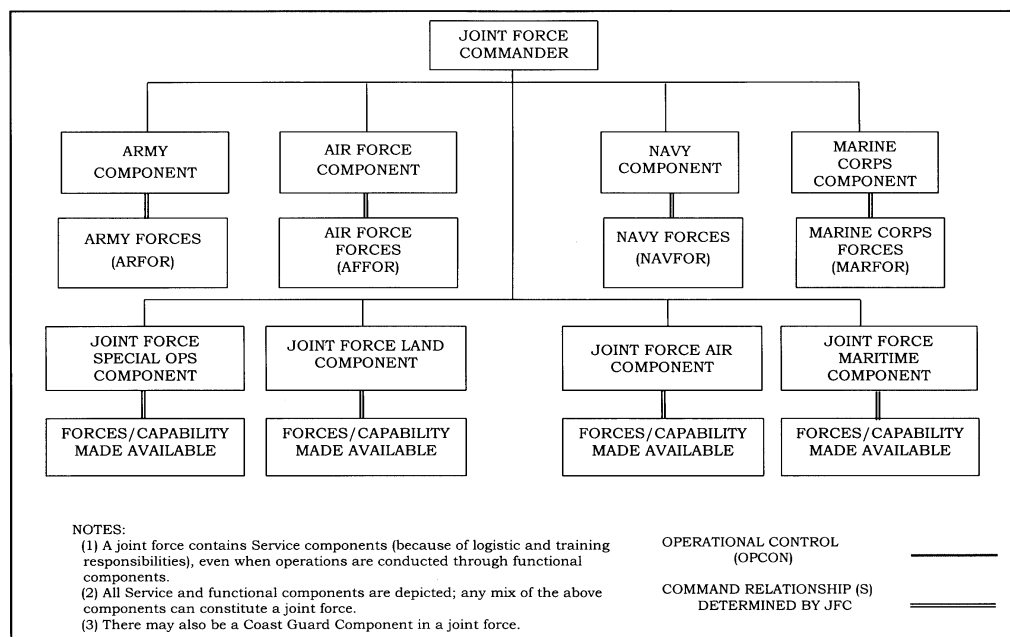


Figure 1-2.  Sample Joint Task Force (JTF)

(3) Operations Division (J-3). The Operations Division assists the commander in the discharge of assigned responsibility for the direction and control of operations.  In this capacity this division plans, coordinates, and integrates operations to accomplish the assigned mission.

(4) Joint Information Operation (IO) Cell.  The JIO cell assists the JFC in coordinating electronic warfare (EW) operations.  The JIO cell consists of, but is not limited to, representatives from staff directorates and component commands. Members of various supporting agencies [e.g., the Joint Information Operations Center (JIOC), Joint Spectrum Center (JSC)] may augment the Joint IO cell.

(5)    Logistics Division (J-4).  The Logistics Division is charged with the formulation of logistics plans and the coordination and supervision of supply, maintenance, repair, evacuation, transportation, engineering, salvage, procurement, health services, mortuary affairs, communications system support, security assistance, host-nation support, and related logistics activities.

(6)    Plans and Policy Division (J-5).  The Plans and Policy Division assists the commander in long-range or future planning, preparation of campaign and outline plans, and associated estimates of the situation.  It also establishes coordination channels with any host nation, neutral nations, or United Nations (UN) force involved in the JTF operation.

(7)    Command Control, Communications, and Computer (C4) Systems Division (J-6).  This division assists the commander in communications, electronics, and automated information systems.  This includes development and integration of C4 architectures and plans supporting the command's operational and strategic requirements.  J-6 also provides policy and guidance for implementation and integration of interoperable C4 systems to implement command and control.

(a)  Joint Command and Control Communications Center (JCCC). The J-6 establishes a JCCC to manage all communications systems deployed during joint operations and exercises.  The JCCC, as an element of the J-6, exercises control over all deployed communications systems.  The JCCC serves as single control agency for the management and operational direction of the joint communications network (ref q).

(b)  Joint Task Force Spectrum Management Element (JSME).  The JSME's primary function is to ensure assigned JTF military forces are authorized sufficient use of the spectrum to execute their designated missions.  It will satisfy spectrum needs and ensure deconfliction, prior to assignment or allotment, of all spectrum-dependent systems including systems used by JTF and component forces, UN, NATO, coalitions, etc.

1.  Although control of individually assigned frequencies is in reality exercised by each user, the supported JFC is the ultimate authority for assigning frequencies to users.  The JFC normally delegates frequency assignment authority to the JSME.  The JSME can further delegate frequency assignment authority to subordinate commands.  The JSME also maintains a common source of spectrum-use information to ensure compatible frequency assignments and, in concert with the EW planners, publishes the JRFL, after approval by the J-3.

    <u>2</u>. The JSME may be assigned from the supported component's J-6 staff, from a Service component's staff, or from an external command.  The JSME must be staffed with trained spectrum managers, preferably with experience in joint operations and knowledge of the spectrum requirements of the JTF component forces.

6. <u>Functional Component Commands.</u>  The JFC may elect to establish functional component commands to control military operations (i.e., Joint Forces Land Component Commander-JFLCC, Joint Force Air Component Commander-JFACC, and the Joint Force Maritime Component Commander-JFMCC).  The JFC will designate the military capability to be made available for tasking by the functional component commander.  These commands may be established for operational purposes across the range of military operations.

7. <u>Service Component Commands.</u>  These commanders have responsibilities derived from their roles in fulfilling the Services' support function, and when designated by the JFC, may also be in the operational chain of command.  They are also responsible for accomplishing operational missions, conducting joint operations, keeping the JFC informed of all decisions that may affect the overall joint mission, and are responsible for all internal administration, discipline, training, and Service intelligence matters.

CHAPTER 2

SPECTRUM MANAGEMENT RELATIONSHIPS IN A JOINT TASK FORCE

1.   Introduction.  Control of the EMB is a key to successful military operations.  The ultimate goal of spectrum use planning and management is to control the electromagnetic spectrum so that it serves the needs of US, UN, allied, and/or coalition forces.  Another goal is to deny the enemy the use of the electromagnetic spectrum so that he is unable to command, control, or otherwise employ his forces effectively.

2.   Duties and Responsibilities.  Outlined below are the duties and responsibilities, IAW CJCSI 3220.01, broken down by command echelon, as they apply to spectrum management of the EMB.

3.   Unified Commander In Chief (CINC).  It is the responsibility of the unified CINC to establish and promulgate command-specific policy and guidance for electromagnetic spectrum-use, JRFL process, JCEOI, and other processes or directives that uniquely apply to their area.  Other duties are to:

a.   Establish a standing frequency management structure that includes a JFMO, and procedures to support planned and ongoing operations.  Specific actions will be taken to:

b.   Ensure operational, contingency, and communications plans address coordination among forces using spectrum to enable effective exchange of information, eliminate duplication of effort, and achieve mutual support.

c.   Ensure plans address any necessary augmentation of the JFMO/JSME to support the effort.

d.  Resolve user conflicts not resolved at a lower level.

e.  Maintain close contact with appropriate foreign military forces to ensure that mutual spectrum support is considered in combined planning, operations, training, and exercises.

f.  Function as controlling authority for JCEOI.

4.  Joint Frequency Management Office.  The responsibilities of the JFMO are to:

a.  Develop and distribute spectrum-use plans for particular frequency bands, as appropriate.

b.  Participate in the IO Cell.  Prepare and combine J-2, J-3, J-6, and component inputs to develop a proposed JRFL for approval by the J-3.

c. Periodically update and distribute the JRFL.

d. Provide administrative and technical support for military spectrum-use.

e. Exercise or delegate frequency assignment authority.

f. Maintain the common database necessary for planning and coordinating control of the EMB. This database contains spectrum-use information on all friendly military and civilian, available enemy and neutral spectrum use unique to the AOR and area of influence (AOI) involved.

g. Analyze and evaluate potential spectrum-use conflicts.

h. Assist and coordinate the resolution of spectrum-use conflicts as a member of the IO Cell.

i. In coordination with J-5 guidance, coordinate military spectrum-use with the spectrum authority of the host nation(s) involved.

j. Serve as the focal point for inclusion of spectrum-use requirements in the Joint Operation Planning & Execution System (JOPES).

k. Receive interference reports IAW reference d and attempt to resolve incidents of unacceptable electromagnetic interference (EMI). Report all EMI

incidents to the JSC. Act as the focal point for requesting Joint Spectrum Interference Resolution (JSIR) support from the JSC.

5. <u>Joint Force Commander.</u> Duties are to:

a. For operations within a CINC AOR, follow electromagnetic spectrum use policy and guidance established by the CINC.

b. Work with the CINC staff if modifications to the spectrum-use policy are necessary for specific situation(s).

c. For operations outside a CINC AOR, assume the responsibilities listed for the CINC.

d. Coordinate with supporting CINCs to determine what functions their staffs must undertake to control use of the electromagnetic spectrum and what outside support is available.

6. <u>Joint Force Commander's Staff</u>

a. <u>Joint Task Force J-1.</u> Coordinate all personnel augmentation for the JSME and ensure these augmentees are added to the Time-Phased Force and Deployment Data (TPFDD).

b. <u>Joint Task Force J-2</u>

(1) Participate (through the IO cell) in multifunctional user spectrum-use conflict resolution.

(2) Assess intelligence needs and provide the J-6 with prioritized spectrum-

use requirements for intelligence operations.

(3)    Participate in multifunctional user, spectrum-use conflict resolution.

(4)    Provide JRFL input.

(5)    Provide the JSME with available enemy spectrum-use data IAW releasability constraints through the Director, National Security Agency (NSA), who serves as the Signal Intelligence (SIGINT) authority.

(6)    Include spectrum-use requirements in the JOPES.

(7)    Assist the J-6 and/or JSME in determining sources of any unacceptable EMI or other persistent and recurring interference.

c. <u>Joint Task Force J-3.</u>  Duties are to:

(1)    Prioritize all spectrum use conflicts that occur to the JSME.

(2)    Provide spectrum-use requirements to J-6 for inclusion in the JOPES.

(3)    Resolve internal spectrum-use conflicts (J-3 systems) which the JSME or IO Cell are unable to.

(4)    Provide concept of operation.

(5)    Identify and resolve potential electromagnetic environmental effect (E3) hazards to ordnance, personnel, and fuel.  Act as focal point for requesting ordnance assistance team support from the JSC.

d. <u>IO cell.</u>  Duties are to:

(1)    Provide the JFC with the capability to integrate, coordinate, and deconflict the full spectrum of EW.
(2)    Assist the JSME in developing, compiling, and distributing the JRFL.

(3)    Assist the component commanders in assessing instances of hostile EW and assist the JSME in assessing situations requiring EW deconfliction.

e. <u>Joint Task Force J-4.</u>  Provide the JSME with any required spectrum use considerations at ports of embarkation/debarkation, or waypoints during the deployment or redeployment phases.

f.  <u>Joint Task Force J-5.</u>  Duties are to:

(1)    Incorporate spectrum use into long-range and future operations planning and the IO strategy, based upon input from the J-2, J-3, IO cell, and J-6 (JSME).

(2)    Establish coordination channels with any host nation, neutral nation, or UN force involved in a joint or coalition military operation to negotiate military spectrum use where procedures do not already exist.

g. <u>Joint Task Force J-6.</u>  Duties are to:

(1)    Provide the JSME with the JTF nets to be included in the JCEOI.

(2)    Assist the electronic warfare officer (EWO) in integrating EW activity into operations to ensure minimum impact on friendly use of the EMB.

(3)    Update the JRFL as required.

(4)    Serve as the IO cell communications representative. Be the primary source for information on the impact of EW actions on friendly C2 nodes and the overall impact of joint EW actions on friendly force operations.

(5)    Assist the JSME with coordination of the component command resolution of reported instances of interference or disruption.

h. Joint Command & Control Communications Staff.  Duties are to:

(1)    Manage all communications systems deployed during joint operations and exercises.

(2)    Exercise control over all deployed communications systems.

(3)    Serve as single control agency for management and operational

direction of the joint communications network. (Figure 2-1 has typical JCCC organization)

i.  Joint Task Force Spectrum Management Element.  Duties are to:

(1)    Establish JTF specific guidance for managing, requesting, coordinating, and assigning electromagnetic spectrum-use, JRFL process, JCEOI, and other processes.

(2)    Prepare and combine J-2, J-3, J-6 and component inputs to develop a JTF JRFL for approval by the J-3.

(3)    When required, periodically update and distribute the JRFL.

(4)    Participate in the IO cell representing spectrum management issues.

(5)    Exercise frequency allotment and assignment authority. Authority may be delegated to issue frequency assignments or allotments to provide components the maximum latitude and flexibility in support of combat operations.

(6) Maintain the common spectrum-use database necessary for planning and coordinating control of the EMB.  This database contains spectrum use information on all friendly military and civilian, available enemy, and neutral forces.

(7)  Analyze and evaluate potential spectrum use conflicts.

(8)  Assist and coordinate the resolution of spectrum use conflicts as a member of the IO Cell.

(9)  In accordance with J-5 guidance coordinate military spectrum use with the spectrum authority of the host nation(s) or coalition forces involved.

(10)  Receive interference reports IAW CJCSI 3220.02, analyze, and attempt to resolve incidents of unacceptable EMI.

(11)  Develop and distribute spectrum-use plans (see Appendix D, Annex C) that include frequency reuse and sharing schemes for specific frequency bands, as appropriate.

7.  Functional Component Commanders. The duties of the Functional Component Commanders are to:

a.  Provide component JCEOI input to include all callword requirements to the JCCC.

b.  Consolidate and validate component spectrum-use requirements to the JSME.

c.  Provide component JRFL input to the IO cell.

8.  Service Component Commanders.  The duties of the Service Component Commanders are to:
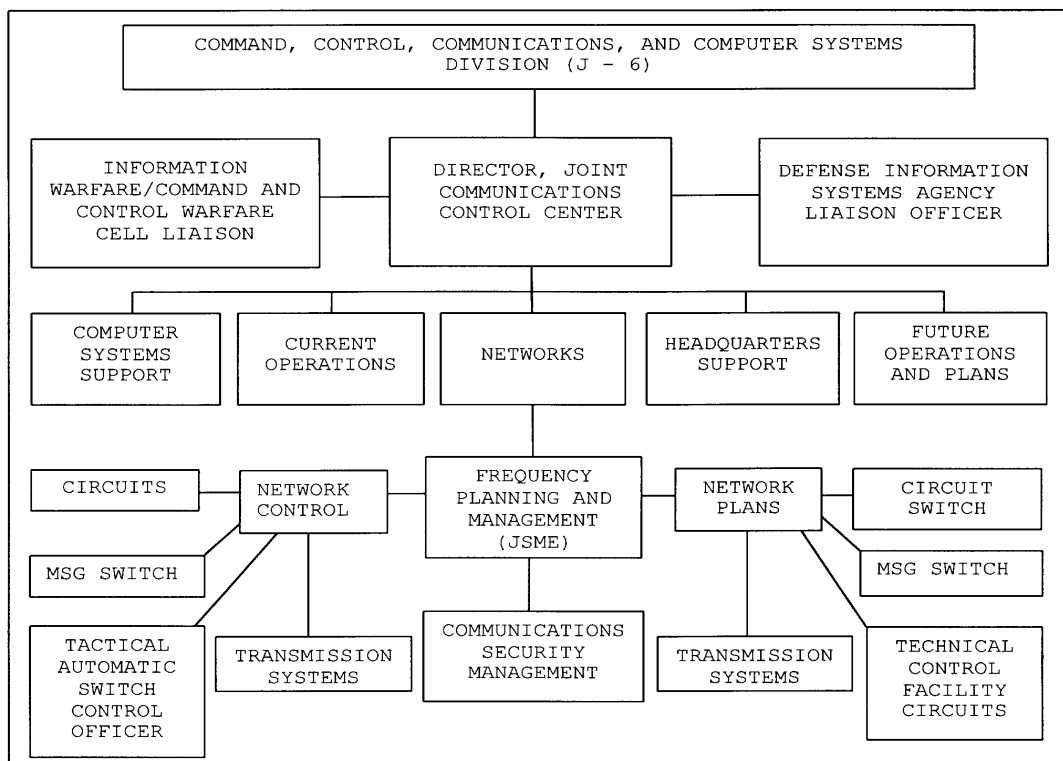


Figure 2-1.  Joint Command Control Communications Center (JCCC)

a   Consolidate and validate component spectrum-use requirements to the JSME.

b.   Provide component JRFL input to the IO cell.

9.  <u>Spectrum Users.</u>   Duties are to:

a.  Obtain frequency authorization for each use of the electromagnetic spectrum by their appropriate joint force component.

b.  Use frequencies as assigned and operate systems IAW parameters authorized by the frequency assignment process.

c.  Coordinate any need to exceed or operate spectrum-dependent equipment outside the parameters authorized by the appropriate spectrum-use plan.

d.  Ensure the spectrum-dependent equipment is properly maintained to preclude unintentional violation of authorized spectrum-use parameters.

CHAPTER 3

PLANNING

1. <u>Introduction.</u> The major decisions made during the planning phase, such as the AOR, concept of operations, force structure, and deployment schedule of force elements, are essential factors that influence the determination of spectrum-use requirements. Therefore, the JFC should establish the JSME early in crisis action planning (CAP) Phase III. Otherwise, the JSME's ability to identify and anticipate spectrum-use requirements can be seriously impaired. Additionally, critical spectrum-use management and oversight during the deployment and employment phases are diluted by the reactive, rather than proactive, meeting of spectrum-use requirements that occur in the planning phase. In effect, most of the actions required of the JSME in the planning phase are carried over into the deployment and/or employment phases if they are not accomplished at the appropriate time.

2. <u>Types of Planning.</u> The two types of planning are deliberate planning and crisis action planning.

a. <u>Deliberate Planning.</u> Deliberate planning is conducted to prepare for contingent situations that could occur in a CINC's AOR and is based on a likely scenario rather than a specific crisis event. Deliberate planning includes developing and specifying the probable force structure, which may be a JTF, necessary to respond to the contemplated situation, but an actual force is not formed unless and until the contingency plan is executed.

In most cases, the CINC's staff conducts deliberate planning. In this likely event, the JTF staff starts with the CINC contingency plan for the operation and must update and refine this plan to fit the situation as it has actually evolved. See Appendix D for JFMO/JSME planning considerations.

b. <u>Crisis Action Planning.</u> The supported commander's staff usually initiates CAP. A JTF is optimally established before or during CAP Phase III Course of Action Development (COA) to allow the designated JTF commander and his staff to participate in the remainder of the CAP process. The JFC's staff must maintain a close relationship with the supported commander's staff during Phases III COA and IV COA selection to ensure that planning activities are coordinated. To preclude interruptions in the planning process, the supported commander's staff must ensure that all materials, such as operations plans (OPLANs) and contingency plans, pertinent to planning, are organized and available.

Once the JTF is formed, the JFC and his staff participate in CAP activities.  During CAP Phase V, the supported commander's crisis action staff publishes the supported commander's operation order (OPORD).  The JFC and his staff conduct parallel, but more detailed, execution planning and normally issue a supporting CJTF OPORD with detailed instructions to subordinates (see reference k).

3.  Joint Spectrum Management Organizations.  The JFMO is a standing day-to-day CINC organization that requests, coordinates, and assigns spectrum resources within the CINC AOR (see Chapter 2 for detailed guidance on JFMO duties).  The JSME is created in support of a JTF.  The JSME's primary function is operational spectrum management in the JTF AOR.  Either the JFMO or JSME can perform deliberate planning and CAP.  Normally, the JFMO performs all deliberate planning and the initial phases of CAP.  The JSME is created, normally by CAP Phase III, and assumes the duties of spectrum management for the specific AOR, when operational.

4.  Spectrum Management Considerations.  To prepare for crisis, contingency, or wartime operations, realistic spectrum-use conditions must be included as the primary objective of both field-training exercises (FTX) and command post exercises (CPX).  This is necessary to ensure that essential players understand the processes of planning, coordinating, and controlling use of the electromagnetic spectrum in military operations.  Where actual means of spectrum employment are limited in a peacetime exercise, such as restrictions on jamming, realistic simulations should be used.  For peacetime exercises, planners should review Joint Universal Lessons Learned (JULL) to help determine realistic simulations to exercise spectrum employment.

5.  Joint Task Force.  The JTF spectrum management concept must comply with the JTF principle of centralized direction and decentralized execution.  The JFMO/JSME must identify CINC/JTF HQ frequency requirements, solicit frequency requirements from component commands early, obtain the necessary frequency assets, and authorize their use by subordinate and component commands through assignments and allotments.  When practical, the authority to make specific, detailed assignments to specific users should be decentralized to subordinate and component commands.  In this regard, the JFMO/JSME establishes spectrum policy, provides guidance, and acts, in a sense, as a frequency broker by obtaining the commodity in bulk quantities and apportioning it in accordance with market demand.  Only through decentralizing the frequency assignment

process is the JFMO/JSME able to provide oversight to the JTF's spectrum-use management functions (EW, intelligence, interference resolution, host-nation coordination, etc.).

6.     Situation Assessment.  An initial gathering of information is made to support spectrum-planning decision making. Sources of this information may include the intelligence community, the JTF warning order, pertinent contingency plans, and previous concepts of operations.  This effort may include updating previously produced orders and plans with current data.

7.     Spectrum Management Concept Development.  This concept merges spectrum management assumptions with current known force capabilities and information updates to support decision making as situation changes and hostile actions dictate.  Since assumptions and force capabilities are different for each JTF operation, and are likely to change during an operation, the concept for managing the spectrum must be tailored to the peculiar requirements of each specific JTF operation.

8.     Spectrum-Use Requirements Determination.  Multiple requirements for spectrum resources are identified, merged, and prioritized according to command doctrine and guidance into a single, refined statement of spectrum-use requirements.

a. Command and Control (C2).  The spectrum is used for C2 of friendly forces.  C2 is embedded in and critical to the operation of some weapon systems, such as precision-guided munitions that rely on a controlling data link, unmanned aerial vehicles, and fire control radar. Communications uses of the spectrum include voice and data. Examples of these uses include C2 links between an operations center and maneuver forces, relay of intelligence and logistics data over satellite links, and coordination between air and ground forces using voice or data links.

b. Information Operations (IO).  The J-3 actively employs equipment that operates in the electromagnetic spectrum for the EW, military deception,  psychological operations (PSYOP), as well as other capabilities and related activities of IO.  EW may include passive reception of enemy emissions for tactical uses.  See references c, n, o for details.

c. Intelligence.  The J-2 uses the spectrum both passively and actively: Passively by monitoring the adversary's use of the spectrum, and actively by using systems such as synthetic aperture radar to learn enemy location, disposition, and intent, and to receive and transmit intelligence and intelligence products.

9.     Spectrum Management Plan Development.  The JFMO/JSME provides spectrum management guidance and support for accomplishing each of the planning tasks outlined in Appendix D.

Deliberate planning for use of the spectrum resource and the assignment of spectrum management responsibilities must be fully integrated and synchronized with events described in the JOPES.

a. The complexity of effective joint spectrum use and management requires advance planning for the scenarios expected in military operations. Each joint and subordinate component command must establish planning procedures that address all spectrum-dependent equipment used in support of an OPLAN/OPORD.

b. Spectrum managers at the JFMO, JSME, and component forces must be fully integrated into the planning process at the earliest stages. Additionally, planning must be done in a manner consistent with that of each joint command expected to be supported. Without advance spectrum management planning, mutual EMI among users and an unnecessary shortage of available spectrum may become a severe limitation to rapid deployment and employment of forces.

10. Joint Spectrum Use-Plan. The essential role of the JFMO/JSME is to develop a spectrum management plan and a spectrum-use plan. The spectrum management plan addresses coordination, control, and use of the electromagnetic spectrum throughout the JTF. While the spectrum-use plan identifies known frequency dependent

system requirements necessary for the fulfillment of the selected COA. Without this central direction, the JTF HQ and component forces could not hope to achieve optimum use of available spectrum resources and therefore be unable to satisfactorily support the JTF COA. The spectrum management and spectrum-use plans are normally published as an appendix to the Communications Annex (Annex K) of the OPLAN or CONPLAN (OPLAN in conceptual format), which are products of the deliberate planning process.

a. The spectrum management plan must be clear and concise so that all spectrum users can understand and comply with its direction, and must be in full compliance with the course of action.

b. The spectrum-use plan must be detailed enough to satisfy all known and anticipated spectrum requirements. It should include a specific list of frequencies or frequency bands required for use in support of the COA. This should evolve throughout the various phases of the operation. Appendix D, Annex C, provides an example that can be used in developing a spectrum-use plan.

c. The JFC may establish a JSME at any time. The later in the planning process the JSME is established, the more critical and time-compressed the effort is to collect and organize the necessary information affecting spectrum use and management.

Regardless of when the JSME is created, the JFC, JTF staff, and JFMO have, in most cases, already started the CAP process and JOPES is likely to be in use. The JSME must be aware that the JFC and JTF staff makes many essential decisions that generate spectrum management requirements and impact spectrum-use planning.

11. <u>Identification of Electromagnetic Spectrum-Use Requirements.</u> One of the primary missions of a unified command is to prepare for warfighting and other contingency actions. Therefore, planners must determine the resource requirements of component forces engaged in executing the plans of the CINCs in advance. The requirements of the JTF HQ must be added. If plans are to be successfully executed, they must provide for critical resources, electromagnetic spectrum.

a. The JFMO/JSME must therefore charge assigned components to identify spectrum requirements in order to carry out their assigned missions. The JFMO/JSME must also obtain the requirements of the spectrum users, primarily the J-2, J-3, and J-6 within the JTF HQ. These requirements must address both communications and non-communications (radar, weapons, etc.) systems and be stated in terms of spectrum requirements to support the force structures involved in the various contemplated contingencies.

b. The JFMO/JSME must also be aware of numerous non-component frequency requirements that may

surface before or during the conduct of operations. These may stem from many sources (diplomatic, media, morale and welfare organizations) and may require a variety of frequencies to satisfy (broadcast bands, high frequency (HF) amateur frequencies, commercial satellite, civil land-mobile, etc).

c. This building-block approach to identifying requirements not only facilitates obtaining and allocating spectrum resources for known requirements but also provides invaluable knowledge of the spectrum requirements of typical modules that may be called out to form a JTF or other such force in response to a short-notice crisis.

d. Failure to identify spectrum requirements in advance and to process them in modular fashion results in the JSME having to accomplish this fundamental action in a compressed time period, along with a many other last-minute details requiring its attention.

e. Users must approach the spectrum management process in a manner consistent with the CINC's policy for spectrum management. The J-6 usually develops the commander's policy, which includes documents such as the CINC's OPLAN and JCEOI.

f. At each level, users must identify and submit spectrum requirements and to the JFMO or JSME as appropriate. Users are also responsible for detecting and reporting potential conflicts in frequency authorizations granted

them so that possible interference situations may be precluded.

g. Users must obtain satellite access authority and the appropriate frequency assignments before actual activation of any satellite circuits. The J-6 Networks Branch of the supported CINC normally consolidates and submits requests for military ultra-high frequency (UHF) and super-high frequency (SHF) satellite access on behalf of the CINC. The operations and communications staff members should be clearly informed as to which JTF action office is responsible for these tasks.

12. Assessment of Electromagnetic Battlespace. Overall, success of JTF spectrum management planning depends on prior knowledge of the proposed EMB.

a. The EMB includes: background environmental information (BEI); the hostile (red), friendly (blue), UN, host nation, and coalition (gray) forces electromagnetic order of battle (EOB), within the JFC's AOR and AOI, see figure 3-1. The BEI is the combination of the civil electromagnetic infrastructure and natural phenomena. The AOI is the electromagnetic environment that surrounds the AOR where a potential for electromagnetic interaction exists.

b. The J-2 is tasked with providing information on spectrum use by hostile forces. In addition, the J-5 is tasked with establishing liaison with host nations and UN forces.

Any such liaison arranged by the J-5 must provide for establishing appropriate channels and working contacts for the JFMO or JSME with host nation or UN telecommunications and/or spectrum management authorities. In addition, OPLANs and CONPLANs pertaining to the AOR may yield knowledge of the AOR's EME. The international frequency list (IFL) maintained by the Radio-communication Bureau of the International Telecommunications Union (ITU), as well as Area Studies, may also be helpful (see Table E-1 of Appendix E for a list of ITU restricted frequencies).

c. The JFMO/JSME must consider any US or friendly force spectrum use occurring in the AOR in support of air, naval, reconnaissance, or special operations forces (SOF), etc. activities. A recommended practice that aids the JFMO/JSME in assessing the AOR EME during the planning and employment phases of actual operations is collecting, organizing, validating, and storing information pertaining to the EMB. This database constitutes the common source of spectrum-use information for the JTF during its existence and may serve as a planning aid for future operations.

13. Authorization of Friendly Force Spectrum. Although control of individually assigned frequencies is in reality exercised by each user, the supported JFC is the ultimate authority for assigning frequencies to

users.  The JFC normally delegates frequency assignment authority to the JSME.  The JSME can, and usually does, further delegate frequency assignment authority to subordinate commands.  The JSME maintains a common source of spectrum-use information to ensure compatible frequency assignments and, in concert with the IO cell, publishes the approved JRFL.

a. Although this common source of information is necessary for maintaining overall control of spectrum use, exercising centralized control without delegating frequency assignment authority should not be practiced. Authority to assign the use of specific spectrum assets should be delegated to the lowest possible level of command consistent with:

(1)    Sound spectrum management.

(2)    The course of action.

(3)    Priority of mission functions.

b. After obtaining the total spectrum-use requirements of the component forces and JTF HQ, and assessing the EMB, the JFMO/JSME must obtain the spectrum resources necessary to support planned operations.

c. Procedures for authorizing use of spectrum are presented in Annex C

to Appendix D.  Fundamental to these procedures is the premise that users must be authorized sufficient spectrum, in the desired bands and with the technical parameters, required to accomplish their missions.

d. In some cases, such as for combat net radios, authorization consists of calling out a specific edition of the JCEOI and/or identifying blocks of frequencies for use in specified bands with specified operating limits (generally known as allotment plan).  In other cases, authorizations are for discrete frequencies, bands, or engineered frequency pairs/complements.

e. The JFMO/JSME must specify methods for components to pass data updates on frequency authorizations to or from the common source of spectrum-use information.  These methods ensure the information remains current in order to facilitate the origination and engineering of follow-on authorizations.  These data updates must also be exchanged laterally as appropriate.

f.  The JFMO/JSME will specify conditions under which coordination must occur and the coordinating authorities to be involved.

14.   Resolution of Electromagnetic Interference.  Unacceptable EMI that adversely affects mission accomplishment may be caused by

friendly, enemy, neutral, or natural sources.  Incidents of unacceptable EMI that cannot be resolved locally will be reported to the JFMO/JSME by the users affected IAW reference e.  The JFMO/JSME assisted by the IO cell attempts to identify and locate the source of interference and provide resolution.
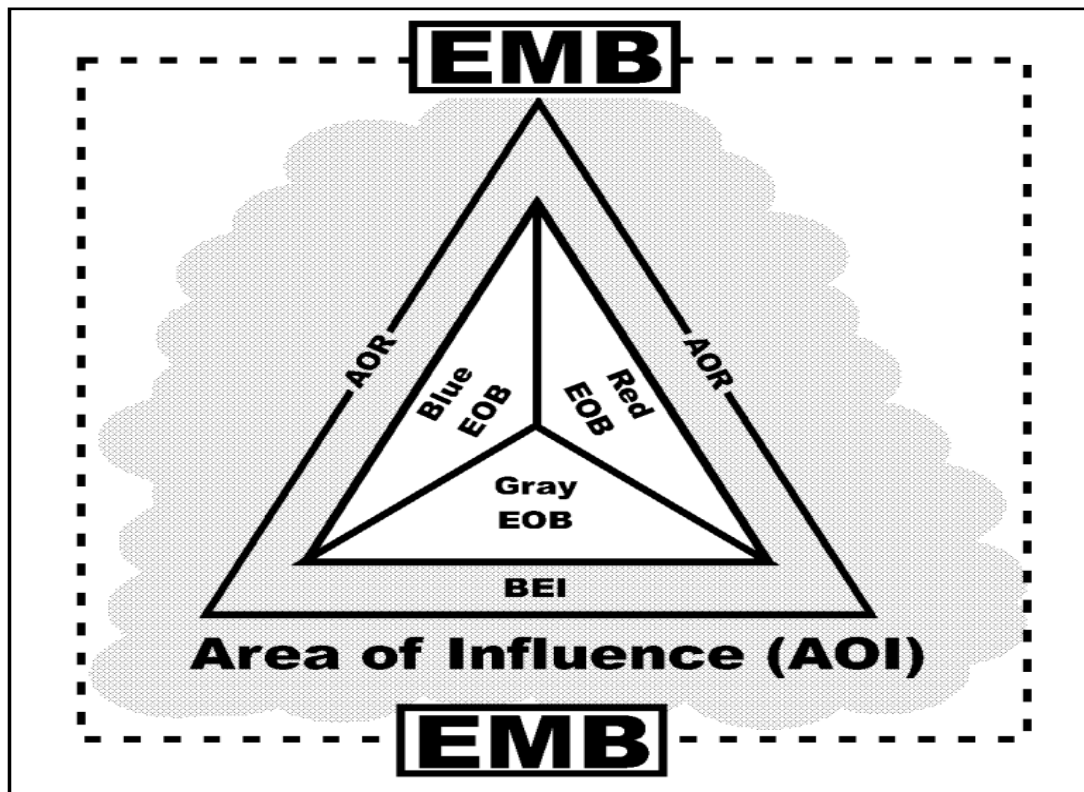
Figure 3-1. Electromagnetic Battlespace (EMB).

a.  The JTF spectrum management plan must provide for reporting and resolving unacceptable EMI.  Appendix B provides procedures for reporting, classifying, and resolving EMI occurrences.

b.  An additional concern is interference from JTF emitters to spectrum-dependent equipment in other countries within the JTF AOI.  Affected countries may cite protection under ITU Radio Regulations that may in turn require diplomatic resolution involving the Department of State.

15.  EW Deconfliction.  EW deconfliction is a process to optimize the use of the spectrum.  This process is used to identify and prioritize a compatible, coordinated listing of PROTECTED, GUARDED, and TABOO frequencies based upon EW, SIGINT, C3, and operational requirements.

a.  The JFMO/JSME involved in EW deconfliction process must consider the spectrum allocation decisions of the ITU and host-nation spectrum management regulations. To distinguish interference from hostile

EW effects, the IO cell must alert the JFMO/JSME to any changes in the state of friendly and enemy EW operations.

b.  To assess the effects of EW on the EMB of the JTF, the JFMO must know the operating characteristics of the EW equipment employed in the JTF AOR.

c.  The IO cell is the primary EW deconfliction authority.  The JFMO/JSME, however, plays an essential role in the deconfliction process. It maintains the database of spectrum-use information and spectrum management tools for performing EW deconfliction.

16.  <u>Spectrum Management Tools.</u>  The primary spectrum management tools available to the JFMO/JSME are spectrum-use information, spectrum engineering and management capabilities, and the communications with which spectrum-use authorizations and information may be exchanged and coordinated.  A description of the designated automated tools currently available is contained in Appendix A.

17.  <u>Spectrum-Use Information.</u>  Joint spectrum management requires a common database of all spectrum dependent systems within the EMB.

a.  The JFC, through the JSME, is responsible for building and managing this common database.  Because of the amount and complexity of spectrum-use information inherent in joint military operations, use of modern computer and communications networking systems is essential to maintain, analyze, and distribute this common spectrum-use information.

b.    Establishment of this database should begin as early as possible in the planning phase.

c.    The data base is initialized by extracting records applicable to the JTF AOR from the database maintained by the CINC.

d.    The data base is then augmented with additional information on red force spectrum-use (as provided by the J-2), gray force spectrum-use (derived by research or liaison), and blue force spectrum-use (JTF).

e.    The database is kept current as changes occur.

18.  Spectrum Engineering and Management Capabilities.  Tools such as those described in Appendix A provide the spectrum manager with many capabilities.  Examples include:

a. Selection of candidate frequencies to meet specific requirements.

b. Modeling the probable performance of a transmitter at specified locations and under given circumstances.

c. Formatting the data necessary to nominate the selected frequencies for authorization.

d. Effecting and recording coordination action.

e. Authorizing and recording spectrum-use in the common spectrum-use database.

f.  Joint Spectrum Management System for Windows (JSMS$_w$) is a personal computer (PC) based system that supports the spectrum manager in peacetime and during contingency operations.  JSMS$_w$ is intended to support JTF operational planning as well as manage the spectrum with emphasis on assigning frequencies, EW deconfliction, and JRFL development during operations.  Spectrum XXI is the next generation spectrum management automation system, which includes JSMSw functionality, interoperates with, and will eventually replace JSMSw.

19.  Communications.  The distribution and exchange of spectrum-use information throughout the JTF is essential if the principles of planning, coordination, and control are to be attained.  The primary tool used by the JFMO/JSME to aid in the timely distribution of data is the SIPRNET.  Successful communication of spectrum-use information depends on the existence of telecommunication paths, data networks using these paths, and common data exchange formats.

a. Telecommunications.  To ensure communications paths are available, when SIPRNET is not, the JSME must plan for means of communications to the supported commanders, assigned and supporting forces, the host nation, and other organizations involved.

(1)     If critical spectrum-use message traffic is adversely affected by delays, the JSME must explore alternative telecommunications paths or means.

(2)    The JSME should ensure that accounts are established on a regional spectrum management database to provide a means of transferring and coordinating spectrum-use information.

b. <u>Common Data Exchange Formats.</u>  Common data exchange formats are essential if spectrum-use information for all participants is to be exchanged. Reference a specifies the standard frequency action format (SFAF) as the common data exchange format for use between US forces and some allied nations.  When the US Message Text Format (USMTF) is required to electronically transmit spectrum-use information, the formatted information can be included as free text in the Remarks portion of the message, with appropriate delimiters as prescribed by the Military Communications-Electronics Board (MCEB).

c. <u>Other Formats.</u>  Other data exchange formats may be specified as required by the CINC, based on the location and circumstances of a given operation.  Such may be the case in exchanging spectrum-use information with host nations (particularly lesser developed nations) or UN forces where narrative descriptions of a frequency transaction may be the only way to convey the information.

20.  <u>Techniques and Procedures.</u>  Generally, the spectrum management infrastructure follows established command relationships.  The JFMO/JSME must ensure that all spectrum management organizations associated with the JTF, internally and externally, are aware of the spectrum management infrastructure, particularly if any variances from the established command relationship infrastructure exist.

The JFMO/JSME must anticipate the need to effect spectrum coordination with external UN, allied, coalition, or US forces.  He must also anticipate the need to coordinate and obtain frequency assets from foreign governments (host nations and other foreign governments whose BEI may be adversely affected by JTF operations or forces transiting to and from the JTF AOR).  If a need for such coordination is identified, the JSME must request this authority as early in the planning process as possible.  Annex C of Appendix D provides an example of a spectrum-use plan.

21.  <u>Execution.</u>  The planning phase officially terminates when the OPORD is executed.  The communications plan supporting the operation is normally published in Annex K of the OPLAN.  Annex C to Appendix D provides an example of a JTF spectrum management plan.

CHAPTER 4

PREDEPLOYMENT, DEPLOYMENT, AND BUILDUP

1.    General. The initial phases of a JTF operation consist of predeployment, deployment, and buildup.  These phases involve planning, loading, transport, and assembly in the AOR of assigned forces.  Transport may be by land, sea, or air or a combination thereof.  Before the commencement of the deployment and buildup phases, the JSME should be functional.  The JSME must know the embarkation, debarkation, and waypoints spectrum requirements of the JTF component forces to assign and allot the necessary spectrum.  These authorizations are especially critical for forces that may have missions in an initial assault, if planned for the operation.

Effective control of the spectrum is extremely difficult when units rapidly change locations and communications lines are minimal. These difficulties may be further compounded by the need to deconflict the initial JTF spectrum-use plan with frequencies already in use in the AOR.  Additionally, any changes in the COA, a result of recently updated intelligence reports, will require a commensurate adjustment of the spectrum-use plan.  The level and

tempo of buildup in the AOR presents the JSME with many challenges as it responds to the rapid gathering of forces, refines the assessment of the EMB, and makes required changes to the spectrum-use plan.  In effect, planning tasks carry over into the deployment phase.

2.    Predeployment. After the OPORD is executed the following steps must be accomplished:

a. The JFMO/JSME needs to ensure that communications are available to link all spectrum management elements.

b. An example of communications means that are available and often used are secure (STU-III) commercial and DSN phone lines, Secure Internet Protocol Router Network (SIPRNET), and facsimile, etc.

c. All spectrum managers must receive the initial spectrum management operational policy and procedures message, the spectrum management plan, JCEOI, and the updated JRFL. This information is critical to planning and execution, and must be disseminated before deployment.

d. Personnel identified in the Time Phased Force Deployment Data List (TPFDL) to augment the

JSME need to be available, processed for deployment, and briefed on the mission.

e. Information must be safeguarded during all phases, especially during predeployment due to its criticality. Essential elements of friendly information (EEFI) must not pass to hostile forces or to those who do not have the "need to know."

3. Deployment. In addition to the challenges of exchanging spectrum-use planning, coordination, and control information, the JFMO/JSME must respond to events that develop during the deployment phase that change spectrum-use requirements. Such events could provide new and different intelligence information regarding enemy spectrum use (J-2); non-JTF activities in the AOR; changes in force composition, tactics, and COA (J-3); or changes to the communications plan (J-6). Consequently, the JFMO/JSME may have to modify the spectrum-use plan of the applicable OPLAN/OPORD.

a. The JFMO/JSME must ensure that all modifications to the spectrum-use plan are coordinated and disseminated to component forces and other involved organizations. This task

is extremely critical and difficult to accomplish due to the transient state of forces concerned. The JFMO/JSME must ensure this essential information reaches every intended participant in time to permit appropriate reaction.

b. The JFMO must transition operations to the JSME from the planning location to the JTF HQ in the AOR and notify all JTF elements. This transition plan should be included in the spectrum management appendix to the OPLAN/OPORD, but if not included, the JFMO must determine and disseminate such during the deployment phase.

4. Buildup. Buildup of component forces in the JTF AOR commences when the initial forces arrive, whether by forced entry or in a permissive environment (as in the case of initial assembly in a host nation to prosecute a future plan of action). In either event, frequency authorizations must be in place so that component commanders can immediately begin exercising C2 over their forces, deploying weapons systems, and functioning in the AOR.

a. Upon arriving in the AOR and positioning the JSME, the leader must reassess the EMB based on actual, on-scene knowledge, and on information from component forces already established in the

AOR. This reassessment could result in updated information on the EMB that the JSME must organize, analyze, evaluate, and when appropriate, enter the spectrum-use database. The JSME must convey information critical to component force employment. The supporting JFMO will continue to forward information important to the JSME.

b. Liaison with the host nation or UN force spectrum management authorities should be solidified as soon as possible following deployment and arrival of the JSME. The JSME should coordinate with the JTF J-5 before effecting any liaison. Verification of host nation spectrum-use, requests for additional spectrum requirements, and establishment of a solid working relationship are necessary.

5. Responsibilities. The responsibilities of the JFMO/JSME during predeployment, deployment, and buildup phases include finalizing electromagnetic spectrum-use requirements, reevaluating the EMB, anticipating requirements for spectrum resources, and identifying, reporting, and resolving unacceptable EMI.

6. Spectrum-use Requirements. During these phases, the

JFMO/JSME must finalize initial spectrum-use requirements. These will be subject to change as additional intelligence is acquired and as the force structure, course of action, or schedule is changed.

Determination of the spectrum-use requirements of all spectrum-dependent communications and non-communications systems is a continuous process, and the JFMO/JSME must be alert to and anticipate changes affecting the JTF spectrum-use requirements.

7. Electromagnetic Environment Assessment. Based on updated intelligence, host-nation coordination, changes in force structure, COA, and initial reports of component or non-JTF forces in the AOR, the JFMO/JSME must constantly reassess the EMB. Actual changes in that environment (new emitters, receivers, topographic, and atmospheric effects) must be analyzed and used to update the JTF EMB database. All future spectrum authorizations (assignments and allotments) derived from the EMB database will depend on the accuracy and currency of this database.

8. Friendly Force Spectrum Authorizations. Because of

unanticipated changes in the force structure, the JFMO/JSME must anticipate new, modified, or additional requirements for spectrum resources.

9.    Joint Spectrum Interference Resolution. As forces arrive and begin activating and employing their organic command, control, intelligence, IO, and weapons and surveillance systems, the JFMO/JSME may expect to receive EMI reports.  Regardless of the extent of prior planning, the introduction of large numbers of emitters into a given EMB in a constantly changing scenario may be expected to produce incidents of EMI.

The identification, reporting, and resolution of unacceptable EMI must be conducted IAW the procedures specified in the spectrum management plan (see Annex C, Appendix D).  When EMI reporting and resolution procedures prove inadequate, or unanticipated changes make the procedures ineffective in the AOR, the JSME may request on-site assistance as outlined in reference k.

CHAPTER 5

EMPLOYMENT

1.　General. Identified herein is a basis for deriving the techniques and procedures the JFMO/JSME will use when engaged in providing spectrum-use management to support the employment phase of JTF operations.

2.　Responsibilities. Responsibilities of the JFMO/JSME during the employment phase of JTF operations remain essentially the same as those during the previous phases.  Emphasis shifts, however, from planning for spectrum use to coordinating and controlling the actual use of the spectrum in support of the COA.

　　If not already formed and operating, the J-3 should activate the IO cell during the employment phase. The J-6, through the JSME, will assist the IO cell by deconflicting EW operations spectrum use of the JTF and by developing and publishing the JRFL (see Chapter 1 and Enclosure A, Appendix E).

3.　Spectrum Use Requirements. The bulk of spectrum requirements were identified during the planning phase and, where possible, met by authorizations made during the deployment and buildup phase.

a. Spectrum use, however, is not static, and component forces may be expected to levy additional spectrum requirements as their maneuvers, missions, and dispositions change.  Special operations, such as deception and creation of subordinate JTFs necessary to carry out the JTF mission, will also hasten a requirement for additional spectrum.

b. Additionally, analyzing the operational EOB against that of the AOR BEI will reveal instances where frequency substitutions/reallocations will be required to alleviate EMI.  When possible, the JSME should satisfy these additional spectrum requirements from within existing resources (spares, reuse, sharing plans).  When authorized frequency assets no longer support required re-accommodation, the JSME must seek additional assets from either a higher authority or the host nation.

c. The introduction of commercial and/or leased spectrum-dependent systems by JTF components and elements, State Department diplomatic representatives, the media,

welfare and relief agencies, etc, will contribute significantly to the JSME workload. Component forces of the JTF should employ prudent spectrum-use practices and inform the JSME of their emerging spectrum requirements as far in advance as possible.

4. Electromagnetic Battlespace Assessment. The JFMO/JSME assessment of the AOR BEI, conducted during the planning phase, constitutes a best guess based on information available at the time. Additionally, overlaying the operational EOB over that of the AOR BEI will result in the EMB. Further, the EMB will constantly change as forces redeploy and as C2, surveillance, weapons systems, and other spectrum dependent applications realign.

a. Therefore, the JSME must constantly reassess the EMB and prepare to modify spectrum-use plans to accommodate these changes.

b. Solutions to spectrum-use conflicts may dictate acquisition of additional spectrum resources, thus generating a requirement for assets that must be processed as described in the paragraph above on Spectrum Use Requirements.

5. Friendly Force Spectrum Authorization. Prior to authorizing

additional spectrum, the JSME must coordinate with all affected organizations such as elements of component forces on the flanks or in the vicinity of the organization receiving the additional frequency authorization or aviation elements that may over-fly the organization receiving the authorization.

a. The JSME must enter the changed/additional authorizations into the EMB database so that the emitter will be considered in all future assessments and deconfliction of the frequency assignments.

b. Component forces of the JTF must keep their EMB database current. Component EMB databases must reflect all authorizations in or near their respective tactical AOR's and AOIs that, due to propagation characteristics, over-flight, or other reasons, may affect a component's use of the spectrum. Component forces must report periodic updates of their spectrum-use databases to the JSME and, where appropriate, to other component forces and supporting elements of the JTF.

6. Joint Spectrum Interference Resolution). The JSME should expect EMI upon activation of spectrum dependent equipment at the start of the employment phase. If the EMI incident is unacceptable,

it must be resolved.  Enclosure A, Appendix B prescribes general EMI reporting, resolution techniques, and procedures.  Those of the JTF should be clearly delineated in the JTF spectrum management plan.

7.     Joint Commander's Electronic Warfare Staff.  The JTF J-6, through the JSME, will function as a member of, or in coordination with, the IO cell (as established by the J-3).  In either case, the JSME will perform two primary functions:

a. Electronic Warfare Deconfliction. EW operations within the JTF AOR/AOI must be deconflicted.  As a member of the IO cell, the JSME must assess the impact of EW operations on the EMB.  Appendix E describes JRFL procedures.

b. The Joint Restricted Frequency List. Members of the IO cell (primarily the J-2 and J-3 representatives) identify the frequencies that must receive various degrees of protection from JTF spectrum-use or Electronic Attack (EA).  The JSME compiles these frequencies, together with any frequencies similarly identified by the component forces, to produce the JRFL.  The JSME organizes the JRFL, presents it to the IO cell for J-3 approval, and distributes it throughout the JTF.  Compilation and production of the JRFL is a

capability of $JSMS_w$ (see Appendix E).

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CHAPTER 6

REDEPLOYMENT

1.    General. The JTF and any or all of its component forces are subject to redeployment at any time.  The JTF may redeploy in its original configuration or restructured for other operations, or it may redeploy to the respective home bases, ports, or garrisons of its constituent elements.  Conversely, if changing international political events or crisis actions dictate, the JTF may redeploy in whole or be restructured and be assigned a new mission.

2.    Responsibilities. To maintain effective planning, coordination, and control of spectrum use during the redeployment phase, the JSME must continue to function at the same level of proficiency and efficiency as in other phases of the JTF operation.  This is particularly true when the JTF redeploy for further operations.

3.    Electromagnetic Spectrum Requirements. The drawdown of spectrum-use requirements needs to be as orderly as the buildup, especially if the JTF is redeploying for further operations.  The requirements will transition from operations to logistical and administrative spectrum-use applications.

4.    Disbandment. Redeployment for disbandment implies an orderly withdrawal.  Under such conditions, operational spectrum use (C3, IO, weapons systems, etc.) to support JTF employment operations will gradually be replaced by administrative and logistical spectrum use required to support the drawdown, re-embarkation, and redeployment.

a. The transfer of certain JTF spectrum resources to any US military structure that may remain in place may be required if:

b. The JTF mission was a relief operation or a noncombatant evacuation operation (NEO).

c. The institution or restoration of a host nation governmental structure is to be carried out as a long-term objective following JTF operations.

d. For these operations, component forces and supporting elements gradually relinquish their spectrum authorizations as spectrum-dependent equipment is shut down and re-embarked for transportation to home facilities.

(1)  Air Force. The Air Force component may be expected to continue to operate administrative air control and terminal facilities (instead of combat or tactical) to support air transport operations engaged in redeploying the JTF.

(2)  Navy. The Navy component may be expected to operate spectrum dependent equipment at port facilities for back-loading JTF elements redeploying by sealift.

(3)  Army and Marine Corps. If redeployment is to be accomplished by land movement, the Army and/or Marine Corps components will require spectrum to support motor convoy and/or rail operations.  Rear guard or security forces may require spectrum support for their missions of protecting the redeployment re-embarkation facilities and maintaining order and traffic control during the redeployment phase.

e. This diversion of mission, from an operational course of action to that of an administrative/logistical scenario, will require the JSME to adjust the spectrum-use plan and begin planning the transition of control back to the CINC JFMO.  Spectrum resources acquired for full JTF operations will most likely support redeployment operations but may require redistribution of frequency assets.

5.  Further Operations. Redeployment for further JTF operations requires recommencing the CAP cycle.  If the JTF is to be redeployed as structured, the JSME will thoroughly know the general spectrum requirements. Therefore, much of the spectrum-use plan will apply.  Frequency assets required by the JTF in the new AOR will, however, have to be acquired, coordinated, engineered, and authorized.

a. If the JTF is to be restructured for redeployment, the JFMO must again:

(1)  Determine and consolidate spectrum requirements (especially those of new component forces joining the JTF).

(2)  Assess the EMB of the new AOR.

(3)   Establish contact with spectrum management authorities of the new host nation and/or UN force.

(4)   Revise the JTF spectrum-use plan to support the new course of action in the new AOR.

b. If the JTF is redeploying for further operations, the JFMO/JSME must recommence the CAP process at the planning phase, as described in Chapter 3, to support a new course of action in a new AOR.  The JFMO/JSME must plan this concurrently with the execution of drawdown, re-embarkation, and transportation spectrum-use and management functions described herein.

c. The JSME, in concert with the JFMO, should develop a transition plan to transfer spectrum management functions from the JSME to the JFMO during movement.

6.   Electromagnetic Battlespace Assessment. The ongoing redeployment activities and redistribution of frequency assets will create changes in the EMB, thus hastening reassessment of that environment.  As transportation facilities increase their tempo of operations and as component forces move from their deployed positions to their points

of re-embarkation, the EMB within the AOR/AOI will present a constantly changing picture

7.   Friendly Force Spectrum Authorization. If the JTF redeploy to conduct further operations, the JFMO/JSME will authorize spectrum use as discussed in Chapter 3 and according the techniques and procedures presented in Appendix D.  If the JTF redeploy to home facilities and disbands, the JFMO/JSME will:

a. Be prepared to frequently readjust the spectrum-use plan and redistribute frequencies in order to accommodate this changing scenario.

b. Reclaim spectrum resources from users, as these resources are no longer required, and return them to the control of the JFMO, host, or interim government.

8.   Joint Spectrum Interference Resolution. Occurrences of EMI may be expected to continue throughout the redeployment phase, and the JFMO/JSME must be prepared to resolve them. While the tempo of combat operations may have decreased, the tempo of unit movement and transportation operations may

have increased and will take place in an ever-shrinking geographical area (reference e).

The JFMO/JSME must determine if any further IO operations are scheduled during redeployment phase.  If none are, then resolution of EMI incidents and deconfliction will be simplified by the elimination of that factor.  At some point in the redeployment phase, the JTF IO cell may cease to function as an entity in the AOR.  At that point, the JFMO prepares to assume full responsibility for EMI resolution and spectrum-use deconfliction.

APPENDIX A

AUTOMATED TOOLS

1. <u>General.</u>  The following are joint approved systems for use by the spectrum manager for spectrum management and JCEOI development.

2.  <u>Joint Spectrum Management System for Windows (JSMS<sub>w</sub>).</u>

a. JSMS<sub>w</sub> should be used in peacetime by the JTF staff at its permanent Headquarters to assist in planning and executing phases of exercises or contingencies, as well as in performing routine spectrum management functions. In a crisis, contingency, or combat situation, the JTF staff will use JSMS<sub>w</sub>, either at the headquarters or at deployed locations to support spectrum management tasks. JSMSw functionality will be incorporated into Spectrum XXI, the new generation Spectrum management automation system that will eventually replace JSMSw.

<u>Proponent.</u>  Joint Chiefs of Staff and the Joint Spectrum Center.

b.  <u>Point of Contact.</u>  JSC/J6, 120 Worthington Basin, Annapolis, MD 21402-5064, DSN: 281-2527, COM: (410) 293-2527.

c. <u>Security Note</u>.  JSMSw will display a security banner equal to the highest classification level of data loaded into the software. This allows operations in a Top Secret environment and all local security directives must be followed.

Table A-1.  System Requirements for JSMS<sub>w</sub> version 3.0.

| CPU | Pentium II (fastest available at time of purchase) |
|---|---|
| Operating System | Windows 95/98 NT Workstation |
| Memory | 64 MB RAM (more is better) |
| Software License | No cost registration |
| Floppy Drives | 3.5-inch |
| Mass Storage | 4-5 GB Removable Hard Disk Drive |
| Monitor | Color monitor |
| Printer | Yes |
| Other | CD-ROM Reader, Mouse |
| Graphics / Video | VGA Video Card |

3.    Revised Battlefield Electronic CEOI System (RBECS).

a.    RBECS is designed to generate hop sets and transmission security (TRANSEC) keys for the single-channel ground and airborne radio system (SINCGARS) and for signal operation instructions.  The system consists of the RBECS software, an NSA-developed random data generator, a user-provided personal computer, and either a printer or a data transfer device (DTD).

b.    RBECS has also been adapted to produce JCEOIs.  It can be used to generate both the umbrella JCEOI (combining generated JCEOI data from several components under the Joint JCEOI Layer) and supporting force CEOI/SOI to support JTF operations.  On 18 October 1993, the Military Communications Electronics Board (MCEB) formally designated RBECS as the joint standard for the generation of JCEOIs, electronic protect (EP) variables (E-sets), and transmission security keys (TSK) for SINCGARS and SINCGARS-compatible radios.  The Joint Automated CEOI System (JACS) is the next generation of RBECS.  JACS will provide a common tool which will interface between spectrum managers and communication planners allowing for automated transfer of information that is easily understood by both parties.
Note:  Both Spectrum XXI and JACS will be fielded in FY 00.

Table A-2.  System Requirements for RBECS Merge for Windows.

| CPU | 486 x 33 Megahertz (MHz) |
|---|---|
| Operating System | Windows 3.1/3.11 for Workgroups |
| Math Coprocessor | No |
| Memory | 8 MB RAM |
| Software License | No |
| Floppy Drives | 3.5-inch |
| Mass Storage | 250 MB Hard Disk Drive |
| Monitor | Color |
| Printer | Yes |
| Other | Mouse |
| Graphics / Video | VGA Video Card |

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APPENDIX B

JOINT SPECTRUM INTERFERENCE RESOLUTION PROCEDURES

1.    General.  EMI to C-E equipment is a continuing problem in all-military operations.  While all spectrum users will at one time or another experience some level of EMI to their C-E systems, it is only when the degree of interference becomes unacceptable that positive action must be taken.

Although EMI may affect mission accomplishment, unacceptable EMI actually impedes operations.  It may be caused by friendly, enemy, neutral, or natural sources.  Generally, EMI must be solved on a case-by-case basis.  Figure B-1 outlines procedures helpful in resolving EMI.  Most interference incidents are dealt with at the lowest possible level within the JTF structure.  When the cause and recipient of the interference are not within the same component force or supporting element, however, resolution becomes more difficult.

2.    Resolving Spectrum-Use Conflicts. Spectrum-use conflicts arise as new requirements for use of the spectrum are identified, and conflicting or competing use of the spectrum should be expected.  CJCS Instruction 3220.01 states that "For conflicting or competing use that affects more than one primary functional area, the IO cell examines requirements and attempts to solve the problem in coordination with the JFMO."

For conflicting or competing use that affects more than one primary functional area, the IO CELL examines its spectrum-use requirements and attempts to resolve the problem.  If resolution is not possible at this level, the IO cell elevates the matter to the joint force commander or his designee, usually the J-3.  Automated spectrum management tools, available to the JFMO/JSME, which can deconflict spectrum usage are listed in Appendix A.

3.    Reporting Incidents of Unacceptable EMI. Affected users will report incidents of unacceptable EMI.  Various service components are usually required and accustomed to reporting EMI incidents in a Service-prescribed format.

4. <u>The JSIR Program</u>. The JSIR program addresses those EMI incidents that cannot be resolved at the component or JTF level. This program is coordinated and managed by the JSC, Annapolis, Maryland.  (Reference e.)

   a. The objective of the JSIR program is to assist the Services and CINCs in resolving persistent, recurring interference that cannot be resolved at the Service or CINC levels.  The JSC JSIR team is comprised of active duty personnel and JSC support services contractor personnel.

   b. JSC has a 24-hour capability for receiving interference reports. USMTF messages to the JSC JSIR team can be sent to JSC ANNAPOLIS MD//OP/JSIR//.  The JSIR team can also be contacted via voice mail pager at DSN 281-2511, extension 7007, or commercial (410) 573-7007. Special compartment information traffic is serviced directly through secure facsimile (FAX) and DODIIS/JWICS in the special compartment information facility (SCIF) at JSC, E-mail address: jscop@nsc.dodiis.

5. <u>Minimum Report Requirements</u>. Information required for the JSIR team to start resolving interference is:

   a. The information contained in the component Service interference report.

   b. System affected by the interference (nomenclature, J/F-12 number, etc.)

   c. Frequency of the victim receiver.

   d. Area and/or location where the interference incident occurred.

   e.  A description of the interference.

   f.  The times and dates the interference occurred.

Figure B-1.  Interference Resolution
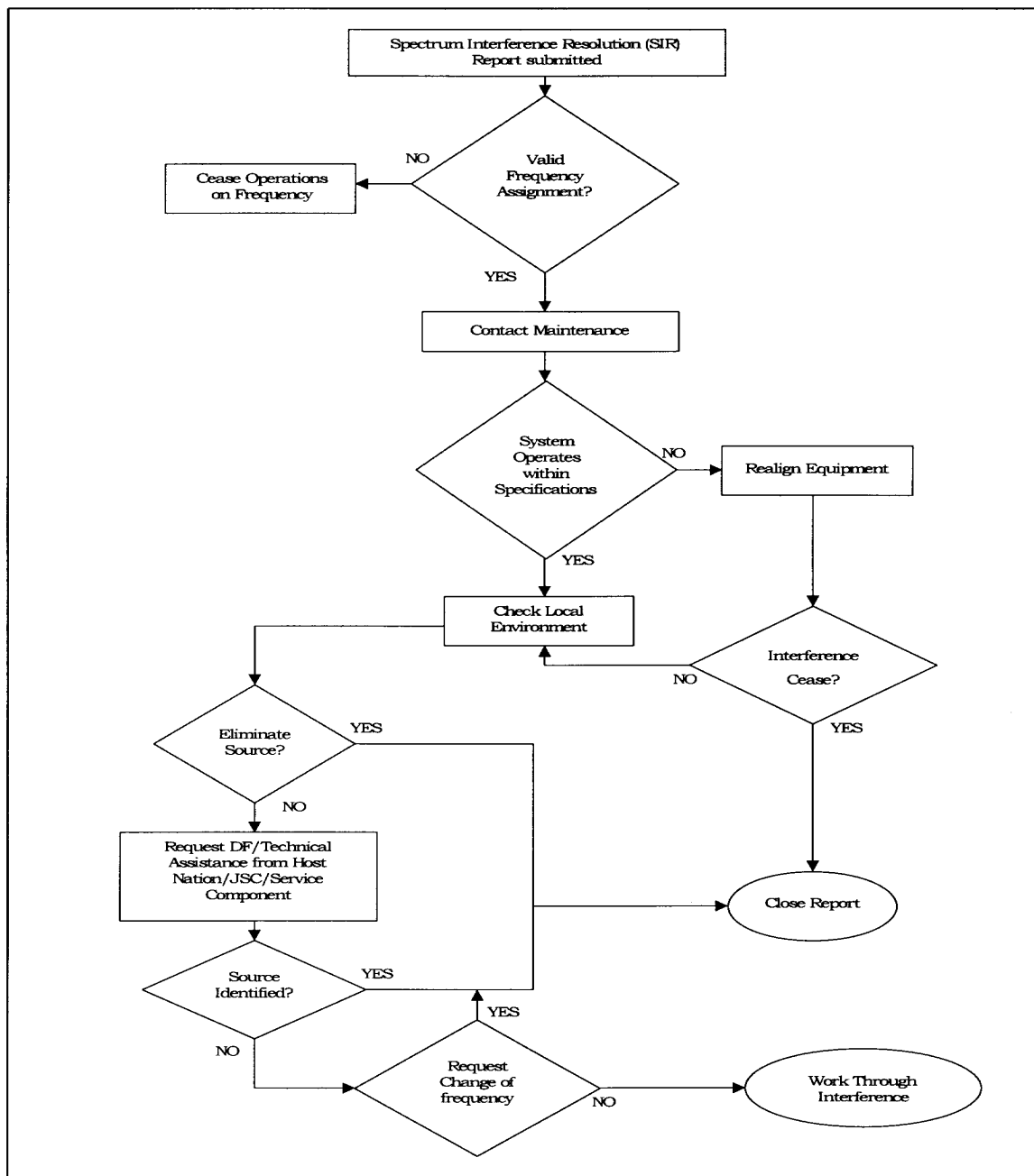
g.  A point of contact with DSN (and/or commercial number) and duty hours available to discuss the interference incident.

6.  <u>JSC JSIR PROCESS</u>.  Upon receipt of a JSIR service request, the JSC JSIR team performs an analysis using JSC models and databases to determine the source, and works with the appropriate field activity and frequency managers to resolve interference problems.

a.  The JSC JSIR team will deploy to the location of the victim organization if necessary to resolve interference problems.  The JSIR team will provide the organization requesting JSIR services a message report of the results of the JSIR analysis and incorporate appropriate information into the JSIR database.  This database supports both trend analysis and future interference analyses.

b.  The general flow of the reporting and resolution procedures for interference to terrestrial users is depicted in Figure B-2.

c.  Space-system interference reporting and resolution processes are similar to the terrestrial reporting/resolution path.  See Figure B-3. Interference reports are forwarded up the operational chain of various space systems.  Interference that cannot be resolved is ultimately reported to CMOC/SC by USSPACECOM component command centers. The space system is considered to include both space-based and earth segments.  CMOC/SCC will forward the incident report to JSC for analysis.
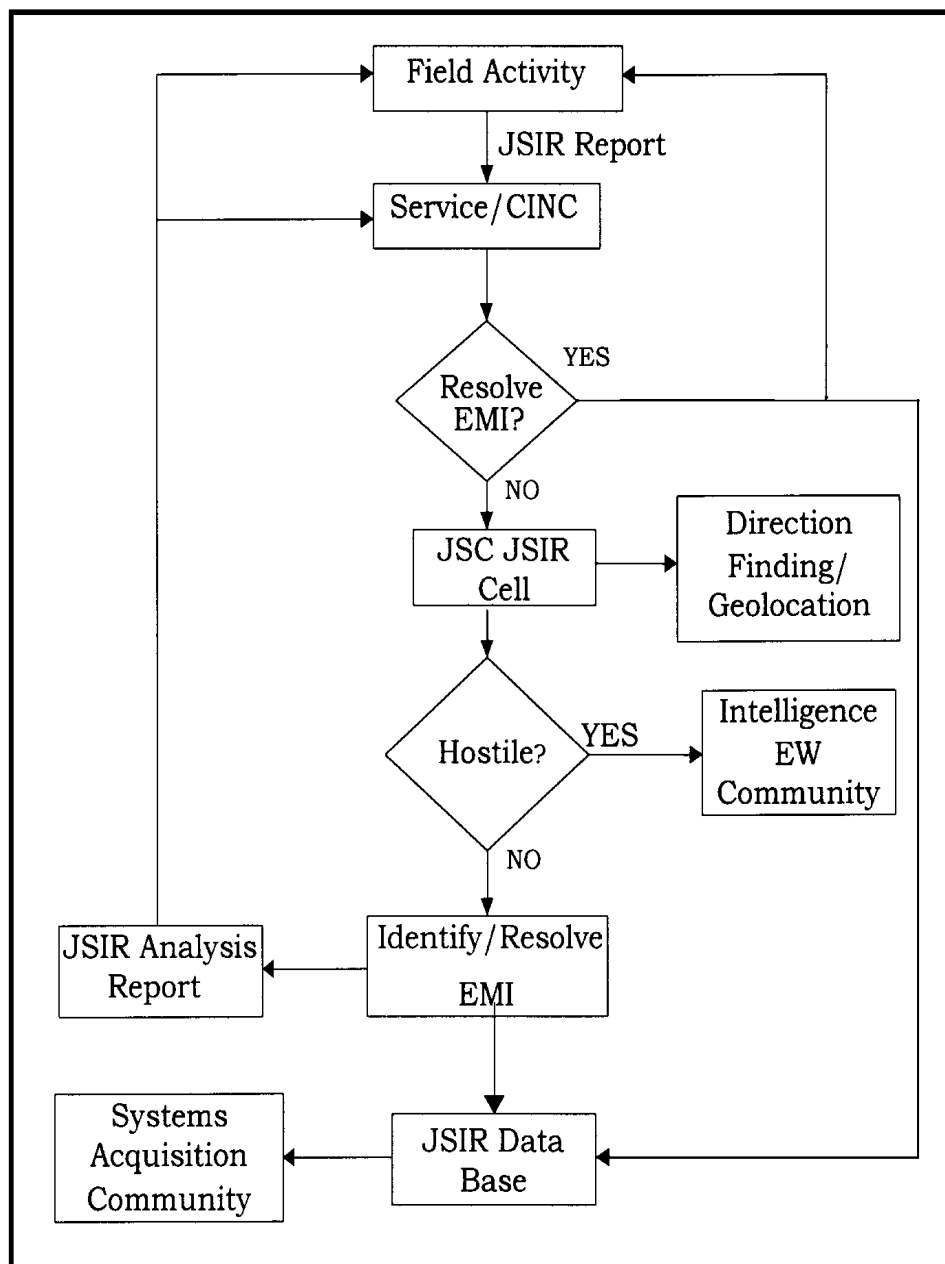
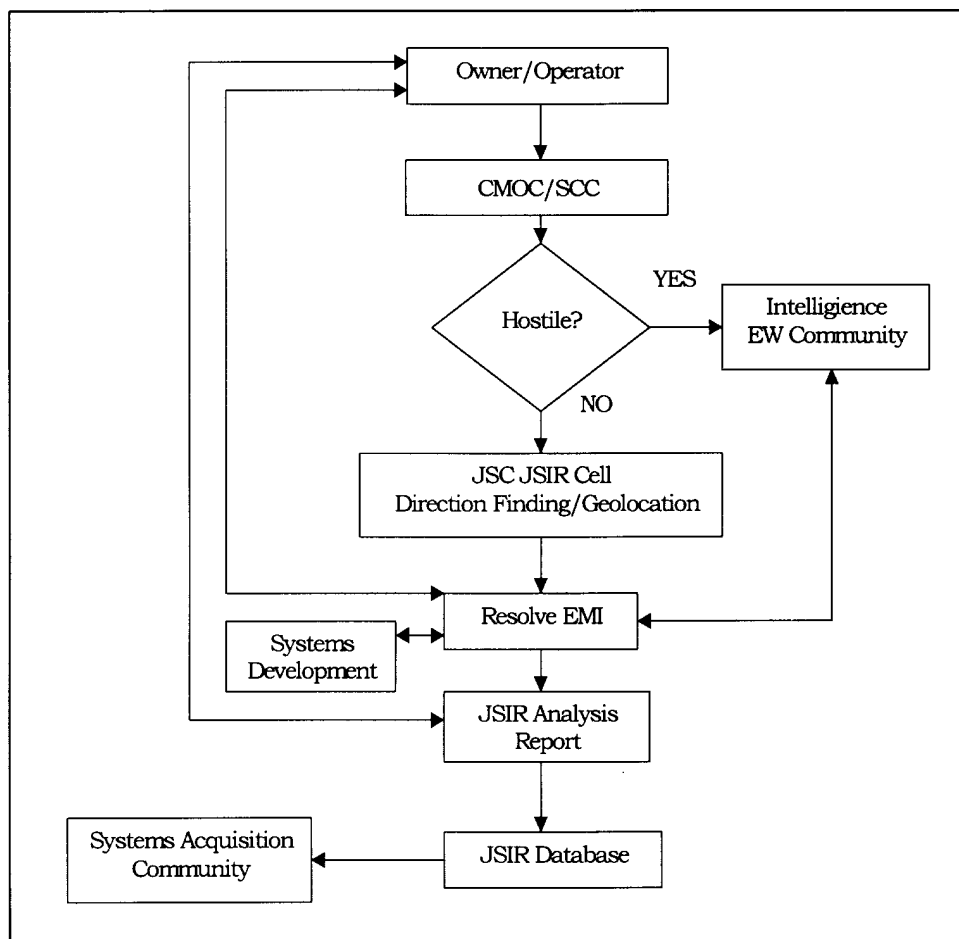Figure B-2 Terrestrial JSIR Reporting and Resolution.

Figure B-3. Space Systems Interference Reporting and Resolution.

APPENDIX C

SUPPORT AGENCIES AND INFORMATION SOURCES

1.  Joint Spectrum Center (JSC)

a. CINC Support Teams.  The Joint Spectrum Center (JSC) CINC support teams provide spectrum management assistance or support to the CINCs and JTFs.  Support includes: JCEOI training, JRFL training, background database support, and spectrum management training using JSMSw software.  The team is staffed with seven Non-Commissioned Officers (two Navy, two Army, two Air Force, and one Marine Corps).  For additional information contact JSC CINC Support Team, DSN 281-9815, Com (410) 293-9815/3763 (Fax); NIPRNET E-mail operations@jsc.mil.

b. Joint Spectrum Interference Resolution (JSIR) Team.  The JSC's JSIR team will analyze and recommend corrective action for reported interference problems by first using the JSC and JSIR databases, analytical tools, and then, if needed, by providing personnel and equipment to perform on-site direction finding, equipment testing, and problem solving.  If the assistance is requested for electronic attack incidents, the JSC JSIR office will coordinate analysis, collection, and field support activities with the appropriate agencies.  To request assistance from the JSC JSIR Team, contact the JSC Duty Officer at DSN 281-9857, Commercial (410) 293-9857, NIPRNET E-mail operations@jsc.mil.

c.  Area (Country)Studies.   Area Studies provide information concerning the physical, cultural, and civil telecommunications characteristics of countries selected by the Joint Staff.  Specific items addressed include: frequency management, broadcasting, telephone, telegraph, and telex, data communications; aeronautical information; maritime  Communications; transmission systems (HF, VHF/UHF, SHF, satellite); frequency assignments, frequency assignment site maps, and frequency assignment histograms for the 0.2-0.5, 2-30, 30-88, 225-400, 406-450, 600-900, 1350-1850, 4400-5000, 7250-8400, and 14500-15350 MHz frequency bands; as appropriate. The reports also contain frequency allocations for the 0.2-0.5, 2-30, 30-88, 138-174, 225-400, 406-450, 600-900, 1350-1850, 4400-5000, 7250-8400, and 14500-15350 MHz frequency bands; general propagation information for reliable in-area and long-haul communications; groundwave planning ranges, predictions of maximum usable frequencies for short-distance HF skywave communications, HF Defense Communications System (DCS)

entry reliabilities, magnetic azimuths and distances from in-area site to selected HF DCS entry stations, and look angles from in-area sites to selected geostationary satellites.  Area Studies are produced on CD-ROM or as printed documents on a case-by-case basis.  The CD-ROM contains files of civil frequency assignments, aeronautical frequency assignments, and broadcast frequencies in vertical SFAF format for use with JSMS$_w$. Included with the printed reports are two 3.5-inch high-density floppy disks containing the same files as the CD-ROM.

JSC Area Studies are compiled from unclassified sources, and are "For Official Use only" and are authorized for release to US Government agencies only.  JSC Area Studies cannot be released outside the DoD without permission from the JSC.  A list of countries for which studies have been completed is provided in Table C-1.  For information, contact the JSC Area Studies Team at DSN 281-2217, commercial (410) 293-2217; to receive current area studies contact the JSC Operations Directorate at (410) 293-9814, and NIPRNET e-mail operations@jsc.mil.

d. HF Predictions and Propagation Studies. The JSC provides HF prediction and propagation studies to Military Departments to enable the user to determine circuit reliabilities for the most combinations of power, emission, and antennas.  Additional information can be obtained from the JSC at DSN 281-2814, commercial (410) 293-2814.

e. Frequency Resource Record System (FRRS)/Distributed Central Facility (DCF) Access.  The JSC's FRRS is a worldwide record-keeping system managed by the Military Communications-Electronics Board (MCEB) and used by DOD frequency managers who require frequency data and background environment information.  The system operates on a worldwide computer network.  This network consists of a Central Computer Facility (CCF) located at the JSC, Annapolis, MD, Distributed Computer Facility (DCF)s located throughout the United States and various overseas locations, intermediate commands, installation frequency management offices, and some operating units. Use of this system ensures the effective and efficient use of the electromagnetic spectrum.  Area CINCs can provide information on the requirements for establishing a FRRS account on the DCF within their area of responsibility.  Spectrum XXI, the next generation spectrum management automation system, will be the DoD standard spectrum management system and will be used at all levels of spectrum management operations (i.e., from strategic/tactical to sustaining base operations).

2.     The Joint Information Operations Center (JIOC).  The JIOC, formerly the Joint Command and Control Warfare Center (JC2WC),

was established in October of 1999 by the Commander in Chief (CINC) United States Space Command (USSPACECOM) to serve, through the CINCUSSPACECOM, as the principal field agency for IO.  Located at Kelly AFB in San Antonio, TX, the JIOC provides direct IO support to operational commanders as well as performing a number of ancillary tasks concerned with operationalizing the concept of IO in all theaters. The JIOC supports the integration of the constituent capabilities and related activities of IO—operations security (OPSEC), physiological operations (PSYOP), military deception, electronic warfare (EW), destruction, and others in joint plans and operations.  Direct support is provided in the following priority order: joint force commanders (combatant commanders, subordinate unified commanders, and joint task force commanders), functional component commanders, and Service component commanders.  Support is also provided to the Office of the Secretary of Defense (OSD), the Joint Staff, Military Services, United States Government (USG) agencies, North Atlantic Treaty Organization (NATO), and allied nations.  For more specific information contact the JIOC Deputy Director for Operations at DSN 969-2911.

3.    <u>National Imagery and Mapping Agency (NIMA).</u>  NIMA provides Digital Terrain Elevation Data (DTED Level 1) for use with JSMSw Topographic Manager (TopoMan) and ARC Digitized Raster Graphic (ARDG) formatted map data that is used for various engineering tools to include the Mobile Subscriber Equipment Network Planning Terminal (MSE-NPT).  NIMA also produces the DOD Flight Information Publication (FLIP) which provides a good source for worldwide communications at airport facilities.  Information on NIMA products may be obtained by calling the NIMA Customer Help Desk at 1-800-455-0899, Commercial (314) 260-1236, DSN 490-1236, fax (314) 260-1128, NIPRNET e-mail chdesk@nima.mil, Internet Home Page http://www.nima.mil.

4.    <u>HQ US Space Command.</u>  HQ US Space Command, located in Colorado Springs, CO, publishes in message form the "Monthly Blue Space Order of Battle" which provides position and other related

satellite data.  For information and distribution of the Blue Space Order of Battle, contact HQ US Space Command at DSN 692-5084.

5.    Air Force Space Forecaster Center (AFSFC)/National Oceanic and Atmospheric Administration (NOAA).  The AFSFC in conjunction with the NOAA transmits a daily solar and geophysical activity summary via AUTODIN message.  This message includes the 10.7-cm daily solar flux value obtained from Ottawa, Canada observatory.  For Information call DSN 560-6264/6311, Commercial (719) 567-6264/6311.

6.    Background Database Information and Database Support.

a. Frequency Resource Record System (FRRS).  The FRRS CD-ROM database contains some Department of Defense (DOD) records that are assigned worldwide.  The CD-ROM is classified CONFIDENTIAL.  For information and distribution, contact JSC database support at DSN 281-2511 ext. 7743 or commercial (410) 573-7743.

b. Government Master File (GMF).  The GMF CD-ROM data base contains government frequency assignment records within the United States and Possessions (US & P) that have been submitted to the Interdepartment Radio Advisory Committee (IRAC) for approval.  This CD-ROM is classified CONFIDENTIAL.  For information and distribution, contact the National Telecommunications and Information Administration at (202) 482-1132.

c. Federal Communications Commission (FCC) Records.  The FCC CD-ROMs contain non-government records within the US&P.  These records are available on CD-ROM by FCC region.  These records are unclassified.  For information and distribution, contact JSC database support at DSN 281-2511 ext. 7743 or commercial (410) 573-7743.

d. International Telecommunications Union (ITU).  The ITU CD-ROM database contains records from the International Frequency List (IFL).  Nations that have notified and registered their frequency assignments with the ITU are contained on this CD-ROM.  For information and distribution, contact JSC database support at DSN 281-2511 ext. 7743 or commercial (410) 573-7743.

e. NATO Frequency Management Subcommittee/Master Radio Frequency List (FMS/MRFL).  The MRFL database contains North Atlantic Treaty Organization (NATO) frequency assignment records that have been converted from 14 point format to vertical SFAF records.  For

information contained in the FMS/MRFL records, contact JSC database support at DSN 281-2511 ext. 7204 or commercial (410) 573-7204.

7. <u>Commercial Sources.</u> The World Radio and TV Handbook (WRTH) provide information on International radio and television broadcasting stations, as well as amateur radio stations. This book is published by Billboard Books and is available at bookstores. For information concerning this publication, write to BPI Communications, 1515 Broadway, New York, NY, 10036.

Table C-1. JSC Area Studies.

| COUNTRY/YEAR REPORT COMPLETED | | | | | |
|---|---|---|---|---|---|
| COUNTRY | YEAR | COUNTRY | YEAR | COUNTRY | YEAR |
| AFGHANISTAN | 1999 | GUYANA | 1998 | PANAMA | 1989 |
| AFRICA (SOUTH) | 1989 | HAITI | 1996 | PAPUA NEW GUINEA | 1990 |
| ALBANIA | 1999 | HONDURAS | 1998 | PARAGUAY | 1990 |
| ALEUTIAN IS. | 1985 | HONG KONG | 1991 | PERU | 1996 |
| ALGERIA | 1995 | HUNGARY | 1997 | PHILIPPINES | 1989 |
| ARGENTINA | 1985 | ICELAND | 1991 | PORTUGAL | 1983 |
| AUSTRALIA | 1987 | INDIA | 1993 | POLAND | 1998 |
| AZORES | 1991 | INDONESIA | 1996 | PUERTO RICO | 1988 |
| BAHRAIN | 1995 | IRAN | 1995 | QATAR | 1998 |
| BANGLADESH | 1993 | IRAQ | 1994 | ROMANIA | 1998 |
| BARBADOS | 1989 | ISRAEL | 1992 | RWANDA | 1992 |
| BERMUDA | 1988 | ITALY | 1992 | SAUDI ARABIA | 1994 |
| BOLIVIA | 1991 | JAMAICA | 1988 | SENEGAL | 1982 |
| BOSNIA-HERZEGOVINA | 1999 | JAPAN | 1998 | SEYCHELLES | 1991 |
| BRAZIL | 1984 | JORDAN | 1988 | SINGAPORE | 1993 |
| BRUNEI | 1991 | KAZAKHSTAN | 1999 | SLOVENIA | 1999 |
| BURMA | 1988 | KENYA | 1994 | SOLOMON ISLANDS | 1994 |
| BURUNDI | 1995 | KOREA (NORTH) | 1996 | SOMALIA | 1993 |
| CAMBODIA | 1991 | KOREA (SOUTH) | 1997 | SPAIN | 1992 |
| CANARY ISLANDS | 1991 | KUWAIT | 1998 | SRI LANKA | 1993 |
| CHAD | 1987 | LAOS | 1992 | SUDAN | 1996 |
| CHILE | 1984 | LATVIA | 1997 | SURINAME | 1983 |
| CHINA | 1997 | LEBANON | 1981 | SYRIA | 1994 |
| COLOMBIA | 1997 | LIBERIA | 1998 | TAIWAN | 1996 |
| CROATIA | 1999 | LIBYA | 1995 | TANZANIA | 1979 |
| COSTA RICA | 1992 | MACAU | 1991 | THAILAND | 1993 |
| CUBA | 1995 | MACEDONIA | 1999 | TOBAGO | 1988 |
| CYPRUS | 1983 | MALAYSIA | 1996 | TRINIDAD | 1988 |

| CZECH REPUBLIC | 1997 | MARSHALL IS. | 1994 | TRUST TERRITORY PACIFIC | 1985 |
|---|---|---|---|---|---|
| DENMARK | 1990 | MAURITANIA | 1992 | TUNISIA | 1992 |
| DIEGO GARCIA | 1991 | MEXICO | 1997 | TURKEY | 1993 |
| DJIBOUTI | 1990 | MICRONESIA | 1994 | UGANDA | 1998 |
| DOMINICAN REPUBLIC | 1999 | MOROCCO | 1992 | UNITED ARAB EMIRATES | 1993 |
| ECUADOR | 1997 | NEPAL | 1988 | URUGUAY | 1990 |
| EGYPT | 1994 | NEW CALEDONIA | 1991 | VENEZUELA | 1999 |
| EL SALVADOR | 1989 | NEW ZEALAND | 1991 | VIETNAM | 1992 |
| ETHIOPIA | 1986 | NICARAGUA | 1991 | VIRGIN ISLANDS | 1988 |
| FIJI | 1994 | NIGER | 1987 | WESTERN SAHARA | 1992 |
| FRENCH GUIANA | 1983 | NIGERIA | 1982 | YEMEN (NO/SO) | 1990 |
| GAMBIA | 1982 | NORWAY | 1990 | YUGOSLAVIA (FORMER) | 1995 |
| GEORGIA | 1999 | OMAN | 1997 | ZAIRE | 1979 |
| GREECE | 1983 | PAKISTAN | 1996 | ZAMBIA | 1979 |
| GUATEMALA | 1992 | | | | |

Appendix C

APPENDIX D

SPECTRUM MANAGEMENT DURING THE PLANNING PROCESS

1.  Introduction.  Quick military reaction to crisis situations in the world requires that precrisis planning be accomplished and that information be made readily available to the JFC.  CINCs plan and theater Service component commanders develop CONPLANs and OPLANs for possible crisis and required military operations.

2.  Deliberate Planning.  The JFMO performs several functions on a daily basis, which center on preparedness for execution of contingency plans.  The JFC establishes the JSME to support joint planning, coordination, and control of the EMB for assigned forces.  The JFMO and JSME perform spectrum-use planning, documentation, and coordination to fulfill these responsibilities. Depending on when the JSME is brought into the CAP process the JFMO should perform tasks to facilitate a smooth transition to the JSME.  This is critical since the time constraints placed on the JTF may be minimal.

The following table will assist the JFMO, Joint Service Theater Commands, and Theater Service Component Commands in deliberate planning.  Note these are only suggestions since every CINC and JTF plans are different; these tasks should be modified to fit the specific needs of the CINC, OPLANs, and the AOR as necessary.

Table D-1.  Deliberate Planning Checklist.

| Create Spectrum Management Manual (SMM) | |
|---|---|
| | To promulgate spectrum use policy, procedures, and guidelines. |
| Maintain library of equipment technical data. | |
| | To develop spectrum-use plan |
| Terrain Data | |
| • DTED | To perform EW Deconfliction and Interference Analysis |
| • ARDG | Aid in performing EW Deconfliction and Interference Analysis when DTED is unavailable.  Also for Mobile Subscriber Equipment Network Planning Terminals. |

| | |
|---|---|
| • Paper Products | Aid in EW Deconfliction and Interference Analysis when DTED is unavailable. |
| **BEI (EME combined with E3)** | |
| • HERO | Consider electromagnetic effects to ordnance when planning joint operations. |
| • FRRS | Database of Current Assignments. |
| • | Maintain current J/F-12 database |
| • Standing Theater JRFL | Current listing of Taboo, Protected and Guarded Frequencies in the CINC AOR. |
| • Area Studies | To extract spectrum-use data in AOR. |
| • ITU | To extract spectrum-use data in AOR. |
| • Intelligence Sources | To extract spectrum-use data in AOR. |
| **Review of OPLANS** | |
| | Estimate of Force Structure. |
| | Estimate of Spectrum-Use Requirements |
| | To ensure spectrum use considerations are included. To ensure augmentation or support is included. Review for any UN, host-nation, or coalition force spectrum-use. To become familiar with previous deficiencies |
| • JULLS | To become familiar with previous deficiencies |
| **Maintain Library** | |
| • Service Unique Manuals. | Aid in spectrum-use planning. |
| • UN, Coalition, Allied Forces Manuals. | Aid in spectrum-use planning. |
| • Joint Policy, Procedures, and Guidelines. | Aid in spectrum-use planning. |
| • Software Manuals. | Aid in utilization or software. |
| • FLIP | Aid in the EME study of AOR. |
| • World Radio & TV Handbook and Satellite and TV | Aid in the EME study of AOR. |
| **JCEOI Development** | |
| • Master Net List of all possible component forces. | Aid in JCEOI Development. |
| • Callword dictionaries. | Aid in JCEOI Development. |
| • Current CINC suffix and expander listing. | Aid in JCEOI Development. |
| **Training Plan.** | |
| | To ensure quality of force. |

| | |
|---|---|
| • Policy and Procedures | Familiarize and standardized procedures. |
| • CINC SMM | Familiarize and standardized procedures. |
| • Service Unique | Familiarize and standardized procedures. |
| • Joint Policy and | Familiarize and standardized procedures. |
| • UN, Allied, and Coalition Force Policy. | Familiarize and standardized procedures. |
| • Spectrum Management Software. | |
| • JSMS$_w$ | To perform spectrum management tasks. |
| • RBECS | To perform spectrum management tasks. |
| • FRRS | To perform spectrum management tasks. |
| Deployment Equipment | |
| | In sufficient quantity to support JSME. |
| • Computer and Peripherals | To operate spectrum management |
| • Computer Communication Device(s). | To support connectivity with other spectrum management sites. |
| • Printer | To support the display of information. |

3.    Crisis Action Planning.  Since each crisis is unique, it is not reasonable to expect to use a rigid set of rules in our response to every situation.  CAP was put into effect in 1976 by the JCS as a system for time-sensitive military planning.  The result of these steps is the ability to develop an adequate and transportation-feasible military response during a time-constrained planning process.  The procedures are categorized into six phases.  Each phase of CAP begins with an event, such as the receipt of a report or order, and ends with a decision or resolution of the crisis.  The JFMO must accomplish all spectrum related planning or tasks required until the JSME is established.

a.    Situation Development.  This phase is triggered by the occurrence of an event where there is a possible security implication for the United States or its interests.  The event is recognized, analyzed, and reported.  The JFMO should be aware of the developing situation and determine the necessity to gather updated information and refresh knowledge on any plans that exist for the developing situation.  Potential harmful electromagnetic radiation to ordnance (HERO) effects should be considered to prevent catastrophic detonation of munitions.  (Munitions from one Service are not designed for operations across all environments.)  This phase ends when the CINC report is received by the NCA and an assessment is submitted.

b.  Crisis Assessment.  In this phase, the NCA and JCS analyze the situation to determine whether military options should be prepared to deal with the evolving problem.  The JFMO should increase information gathering and review all available options.  This phase ends with the decision of the NCA to have military options developed.

c.  Course of Action Development.  During this phase, the CINC is presented with all available options for action.  The JFMO, augmented by theater Service component spectrum managers, begins to develop the spectrum management concept for the possible JTF operation.  The interaction between planning cells is critical to allow spectrum-related issues to be considered and provide the JFMO staff a better understanding of the crisis situation.  Phase is complete upon release of CINCs estimate of the COA.

d.  Course of Action Selection.  During this phase the NCA receives the COA brief and selects a COA and forwards that decision to CINC for the beginning of execution planning.  During this phase, the force structure should be solidified and the JFMO/JSME should begin finalization of the spectrum management concept.

e.  Execution Planning.  In this phase, the supported commander transforms the NCA-selected COA into an OPORD.  In order to execute the approved COA, detailed planning is performed.  The actual forces, sustainment, and strategic transportation resources are identified, and the concept of operations is described.  This phase ends with the NCA decision to execute the OPORD, place it on hold, or cancel it pending resolution by some other means.

f.   Execution.  The Secretary of Defense will authorize CJCS to issue an execute order that directs the CINC to carry out the OPORD.  The CINC then issues an executive order to subordinate and supporting commanders that directs the execution of their OPORDs.

Table D-2.  Crisis Action Planning Checklist.

| CAP Phase 1 Crisis Action Planning | |
|---|---|
| | Review OPLANs & CONPLANs. |
| | Availability of data (DTED, ARDG, Area Study) |
| | Improve databases from those collected in deliberate planning specifically for AOR. |
| CAP Phase 2 Crisis Assessment | |
| | Gathers BEI from sources available. |
| | JFMO receives augmentation, as necessary. |
| CAP Phase 3 Course of Action Development | |
| | Interaction with other planning cells to consider spectrum-related issues in all planning. |
| | Develop understanding of crisis. |
| | Continue gathering AOR EME. |
| | Consider harmful electromagnetic effects to ordnance (HERO) when planning joint operations. |
| | J-5 establishes coordination channels, if needed. |

| | |
|---|---|
| | Develop initial spectrum management concept. |
| | Develop contact list, telephone, fax, SIPRNET. |
| | Host nation allocation tables, as needed. |
| | Maintain currency of all AOR assignments. |
| | Merge spectrum-use assumptions with current known force structure. |
| CAP Phase 4 Course of Action Selection | |
| | Finalize the spectrum management concept. |
| | Data call for spectrum-use and JCEOI inputs. |
| | Special spectrum-use requirements non-military (e.g. diplomatic, media, morale/welfare, etc.) |
| | Out of band requirements. |
| | Coordinate with UN, host-nation, and allies for spectrum-use. |
| | Finalize spectrum-use plan. |
| | JSME augmentation and support. |
| | EW requirements. |
| | Outside agency operational and planning support |
| CAP Phase 5 Execution Planning | |
| | Finalize spectrum management Annex to OPORD. |
| | Participate in the IO cell. |
| | Compile and submit draft JRFL to the IO cell. |
| | Publish Spectrum Management Annex. |
| CAP Phase 6 Execution | |
| | Assess the Spectrum-Use Plan with the EME to define and analyze the EMB. |
| | Reuse and sharing plans established in congested bands (e.g. M225-400). |
| | JOPES input. |

| | Identify movement plans through TPFDD. |
|---|---|
| | Distribute allotment plans and assignments. |
| | Publish JCEOI and JRFL. |

4.    Executional Phases.  During the execution of an OPORD, there are many phases and special considerations for each.

    a.  Predeployment.

       (1) Communication.  The JFMO/JSME needs to ensure that communications are available to link all spectrum management functions together.  Alternate means of communications should be considered to prevent isolation.  A timeline needs to be established to transfer authority from the JFMO to the JSME when the JSME deploys forward.  All units need to be aware of who is the assignment authority during that planned timeline.

       (2) Distribution.  The JFMO/JSME should distribute the initial spectrum-use plan, JCEOI, JRFL, and spectrum management annex to communications appendix, the common EMB database, with updates to functional levels.

       (3)  Equipment and Personnel.  Time needs to be allotted for all augmentees and support to receive personnel deployment checks, and to be briefed on the overall concept of the operation.

       (4)  Security.  Information must be safeguarded during all phases but especially during this phase due to the critical need for force protection and essential elements of friendly information (EEFI).

    b.  Deployment.

       (1) The deployment of a JTF involves the loading, transport, and assembly in the AOR of forces assigned to the JTF.  Transport may be by air, land, or sea or a combination thereof.  The JFMO/JSME must have the information contained in the JOPES and TPFDD to determine the force structure and to know the embarkation and debarkation schedules of the JTF component forces in order to assign, allot, and coordinate the necessary spectrum-use authorizations.

       (2)  Spectrum-Use Plan.  The spectrum-use plan actions taken during the deployment phase are continuations of related tasks begun during the planning phase of the operation.  Additional frequency requests are reviewed, evaluated, and coordinated with host-nation frequency management personnel.  Coordination procedures contained in reference b or those established by J-5 should remain

in effect. Allotment plans should be reviewed to determine if any additional spectrum resources should be provided to a component. Allotment plans and assignments should periodically be evaluated as participating units or component requirements may significantly change during the different phases of the operation. The J-2, J-3, and J-6 should review the frequencies in the JRFL to identify any changes required as a result of a modification to the COA or a change in activity in the AOR. Annex E to this appendix provides a description of the data fields for the JRFL.

c. Employment Phase. Throughout the employment phase of a JTF, the JSME must constantly anticipate and support fluctuating spectrum-use requirements resulting from changes in the EMB.

(1) Resolving Spectrum Use Conflicts. The JSME analyzes intelligence; operations; EW; C4, etc., requirements to identify potential spectrum-use conflicts. When conflicts are identified or reported, the JSME works to resolve those conflicts, i.e., deconflict. Spectrum-use conflicts that cannot be resolved by the JSME will be referred to the IO cell. Those conflicts not resolved by the IO cell will be referred to the J-3.

(2) Deconfliction. Deconfliction may be accomplished by changing the frequency for one or more of the users; by changing the parameters used, e.g. reducing

effective radiated power; by changing the antenna type or orientation; by time-sharing use of the frequency; or by increasing the separation distance between the equipment affected.

(3) Electromagnetic Interference Resolution. A significant amount of EMI can occur at the start of the employment phase when the JTF activates large numbers of spectrum dependent equipment and when JTF spectrum-use is overlaid on the AOR EME. These and other EMI incidents should be resolved using the procedures in Appendix B.

d. Redeployment. This process includes the phased removal of forces from the AOR. This will free resources for hand-over to the provisional government, UN forces etc. Assets must be redistributed and redefined as the role of forces changes from an operational mission to that of administrative/logistical one.

(1) Spectrum-Use. Requirements for use of the spectrum will continue throughout the redeployment phase until all participating forces have departed from the area of operations. Frequency requirements for combat forces will be reduced, while other requirements for services such as humanitarian support, civil affairs, and rear-area security will increase. Modifications to frequency-use plans may be required to reflect the changes in the composition, roles, and missions of the participating forces during this

phase of the operation.

(2) Transfer of Database Information.

(a)     The transfer of information between the component frequency-management offices and the JSME will continue to be required during the redeployment phase until a component ceases to participate in the operation and all necessary frequency-management actions are completed; for example, frequency assignments no longer required are canceled, their records are deleted from the database, unused frequency resources returned to host nation, etc.  A copy of the frequency assignments and allotments existing at the termination of a component's or a JSME's participation should be archived for possible use in future exercises or contingencies.

(b) Spectrum management Responsibility may be transferred between organizations during any phase of an operation.  However, this transfer is more probable during the redeployment phase when the majority of the tasks may be assigned to a single component. The JSME must develop a transition plan as to when the spectrum management

responsibility is to be transferred between organizations.  The spectrum management responsibility must be transferred in an orderly manner and any changes in procedures, personnel, telephone numbers, etc., must be provided to the organizations affected.

(c) The JSME must develop special plans and procedures if the hardware used for automated tools is to be changed.  The transfer of data should require only a few hours if the computers are electronically linked.  However, this process can take significantly longer if the software programs and database information is to be loaded from disks.  The JSME must assure availability of the proper hardware, software, procedures, and time required before the transfer of frequency management responsibility between organizations.

(3) Transfer of Responsibility.  If the JTF is to be dissolved, the responsibility for spectrum management will transfer from the JSME to the JFMO during or at the end of the redeployment phase.  Until this transfer occurs, the responsibility for day-to-day spectrum management remains with the JSME.

Appendix D

Table D-3.  Operational Phases.

| Predeployment | |
|---|---|
| | Receive and review frequency request for completeness, accuracy, and compatibility. |
| | Develop transition plan from JMFO to operational JSME |
| | Identify communication to all JTF spectrum managers. |
| | Distribution of critical information. |
| | Readiness of personnel and equipment. |
| | Security of EEFI |
| | Deploy to forward area. |
| | JSME operation and connectivity |
| | EME, AOI, and AOR database updates. |
| **Deployment** | |
| | Receive and review frequency request for completeness, accuracy, and compatibility |
| | Identifies and transfers databases as necessary. |
| | Develops procedures for the transfer of databases. |
| **Employment** | |
| | Receive and review frequency request for completeness, accuracy, and compatibility |
| | Ensure sufficient spectrum is assigned or allotted for all spectrum dependent systems. |
| | Allot additional frequencies to components as identified, create needed reuse or sharing plans based on geographical separation or use. |
| | Coordinate use of spectrum resources with UN, host nations, and allies. |
| | Update JRFL |
| | Coordinate with the IO cell on EW deconfliction. |
| | Identifies and proposes solution to IO spectrum-use conflicts |
| | Attempts to resolve EMI and reports if necessary. |
| | Updates spectrum-use information for J3 inclusion in the JOPES. |
| | Develops transition plan back to the JFMO. |

| Redeployment | |
|---|---|
| | Receive and review frequency request for completeness, accuracy, and compatibility |
| | Identifies updates and transfers databases. |
| | Satisfies requirements for intermediate staging bases, points of embarkation etc. for smooth operation of redeploying units. |

(INTENTIONALLY BLANK)

ANNEX A TO APPENDIX D

ALLOTMENT PLAN PROCESS

1. An allotment plan identifies small bands or groups of frequencies within a specified spectrum-use plan for use by a specific organization or for a particular function. The use of an allotment plan enables the joint force commander to maintain overall control of spectrum use in the AOR, and at the same time decentralizes authority to the lowest level.

2. Allotment plans are normally developed for, but not limited to, HF (2-30 MHz), VHF (30-88 MHz and 118-174 MHz), and UHF (225-400 MHz) bands. The frequency allotments in each of these plans must be based upon a ratio of air, land, and sea forces for a particular operation or mission and an assessment of their spectrum requirements. Planners should consider spectrum-use restrictions when developing an allotment plan.

3. Planners obtain the spectrum-use requirements on which the allotment plan is based are obtained from the CINC; J-2, J-3, and J-6 staff elements and components; the JCEOI Net List; and any UN, allied, or coalition forces, if known. When developing an allotment plan, the developer must consider joint and/or multinational-force equipment capabilities, host-nation allocations and restrictions, RF requirements for wide area assignments, jam-resistant equipment, navigational aids, wartime reserve mode (WARM); and equipment that requires specified frequencies.

4. JFMO/JSME planners must evaluate all requirements in the allotment plan for electromagnetic compatibility (EMC) and eliminate any potential conflicts. If not all of the requirements can be satisfied, the IO cell must attempt to resolve conflicts based upon operational priorities. The IO cell will refer the situation to the J-3 if it cannot resolve the conflict.

5. The following details the steps for creating an allotment plan.

    a. Is there an existing channeling plan for the frequency band?

        (1) Yes - Begin development of allotment plan at paragraph 4.

        (2) No - Begin development of allotment plan at paragraph 2.

    b. Divide band into individual channels (uniform bandwidths or mixed).

| $F_0$ | | | | | | | | | | | | | | $F_n$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

c.  Begin with all channels in the band as candidates.

d.  Block known existing/denied frequency assignments:

   (1)  Allocated for other/special use, e.g. NAVAIDS (ILS Glide-slope).

   (2)  U.S. permanent frequency assignments in AOR.

   (3)  IFL listings in and within interference distance of AOR.

   (4)  Host-nation/neutral-nation frequency use.

   (5)  U.S., UN, and Coalition forces' specific frequency requirements.

   (a) Satellite frequencies.

   (b) Fixed-frequency equipment.

   (c) Special frequency complements, (e.g., spread-spectrum hop sets, etc.).

   (d) Frequencies for JTF HQs/JCS controlled assets.

   (e) Other frequencies as required.

e.  Identify U.S. and Coalition forces' spectrum-use requirements (Requirements should be presented in numbers of nets, circuits, etc. for translation into the number of frequencies required).

f.  Analyze requirements for separation distances (minimum and maximum), channel size(s) and bandwidth(s) requirements.

g.  Determine percentage requirements for coalition and component forces based upon requirements.

h.  Allot remainder of available channels to participating forces based upon percentage of requirements.

i. An allotment plan is usually conveyed to the user in a simple format that contains a listing of the frequencies derived through the (process described above) and preceded by a paragraph specifying all restrictions applying to the allotted frequencies, e.g., transmitter power, authorized emission and bandwidth, geographical location, maximum transmitter altitude, function, etc.

ANNEX B OF APPENDIX D

JOINT NETS

The following is a list of CINC and JTF nets that were extracted from reference i.

1.  <u>CINC Nets.</u>

CINC 1.  CINC Command Net -- Secure UHF SATCOM voice net connecting the supported CINC, CJTF, and selected subordinates.

CINC 1A.  CINC Command Net -- Secure HF-SSB voice net connecting the CINC, CJTF, and selected subordinates.

CINC 1B.  CINC Command Net -- Secure SHF SATCOM data net connecting the supported CINC and selected subordinates.

CINC 2.  CINC Mission Radio Net (CMRS) -- Nonsecure HF-SSB voice net supporting Security Assistance administrative matters.

CINC 3.  Command Data Net -- Secure HF data net between supported CINC and CJTF.

CINC 3A.  Command Data Net -- Secure HF data net between supported CINC and COMUSFOR (<u>country</u>).

CINC 3B.  Command Data Net -- Secure HF data net between supported CINC and COMDEFCOM.

CINC 4.  CINC Special Intelligence Net -- Secure HF-SSB data net linking supported CINC, CJTF, and selected special intelligence elements.

CINC 5.  Special Intelligence Teletype Circuit -- Duplex 100 WPM secured teletype circuit   between USCINCLANT and COMUSFOR COUNTRY.  Circuit becomes operational upon activation of COMUSFOR COUNTRY in the objective area.

CINC 5A.  Special Intelligence Teletype Circuit -- Duplex 100 WPM secured teletype circuit between USCINCLANT and CJTF 140 when forward deployed.  Circuit is to become operational upon activation of CJTF 140 by USCINCLANT.

CINC 6.  Tactical Missile Alerting Net -- Secure UHF SATCOM voice alert broadcast net to CJTF and in-theater forces.  Established upon direction of CJTF.

2.  <u>JTF Nets.</u>

JTF 3.  Embassy Emergency/Voice Command Net -- Nonsecure HF-SSB voice net between military commanders and embassy in the area of the crisis.

JTF 3A. Embassy Emergency/Voice Command Net -- Secure VHF-FM voice net between military commanders and embassy in the area of the crisis.

JTF 3B. Embassy Emergency/Data Command Net -- Secure HF-SSB Data net between military commanders and embassy in area of crisis.

JTF 5. Out-Of-Country Net -- Secure/nonsecure UHF SATCOM voice net providing the CJTF and component headquarters with DSN access via a satellite ground entry station.

JTF 6. Noncombatant Evacuation Net -- Nonsecure HF-SSB voice net to link selected evacuation points and elements being evacuated.

JTF 6A. Non-Combatant Evacuation Net -- Nonsecure HF-SSB voice net activated by CJTF or senior objective area commander to link selected evacuation points and elements being evacuated.

JTF 7. Joint Medical Regulation Net -- Nonsecure HF-SSB voice net linking CJTF-designated medical authorities.

JTF 7A. Joint Medical Regulation Net -- Nonsecure VHF-FM voice net linking CJTF-designated medical authorities.

JTF 8. JTF Objective Area Special Intelligence Net -- Secure HF-SSB data net linking supported CINC, CJTF, and selected special intelligence elements.

JTF 8A. JTF Objective Area Special Intelligence Voice TACSAT net -- Secure UHF SATCOM between CJTF and subordinate/supporting commanders.

JTF 11. Joint Command Net -- Secure UHF SATCOM net for CJTF and components.

JTF 11A. Joint Command Net -- Secure HF-SSB voice net (backup to JTF 11).

JTF 12. Joint Administrative/Logistics Net -- Secure UHF SATCOM voice/facsimile net connecting CJTF and subordinate forces to coordinate routing administrative and logistical requirements.

JTF 12A. Joint Administrative/Logistics Net -- Secure HF-SSB voice (backup to JTF 12).

JTF 17. Joint/Combined Search and Rescue (SAR) Net -- Nonsecure HF-SSB voice net linking SAR elements.

JTF 17A. Joint/Combined Search and Rescue (SAR) Net -- Nonsecure UHF voice net linking the SAR elements.

JTF 17B. Joint/Combined Search and Rescue (SAR) Net -- Nonsecure VHF-FM voice net. Links SAR elements.

JJTF 18. JTF Communications Engineering Net -- Secure HF-SSB voice net for

coordination relating to communications systems operation.

JTF 19.  Joint Information Bureau Net -- Nonsecure HF-SSB operated in accordance with special instructions promulgated by the supported CINC Joint Information Bureau.

JTF 19A.  Joint Information Bureau Net -- Nonsecure VHF-FM operated in accordance with special instructions promulgated by the supported CINC Joint information Bureau.

JTF 23.  JTF Objective Area Voice Command Net -- Secure VHF-FM voice command net linking JTF forward-deployed element in the objective area with designated subordinates.

JTF 24.  Medical Evacuation Net -- Nonsecure VHF-FM voice net linking JTF units for purpose of medical evacuation.

JTF 24A.  Medical Evacuation Net -- Secure UHF SATCOM data net between JTF field hospital and area of operation medical center.

JTF 70.  Commander Joint PSYOP NET -- Configuration to be promulgated when activation is required.

JTF 75.  Joint Counter Intelligence Coordination Net -- Configuration to be

promulgated when activation is required.

JTF 81.  Joint Supporting Arms Coordination Net -- Secure HF-SSB voice nets for component forces to coordinate with CJTF concerning supporting arms for fire which impact outside of the Task Force areas of operation.

JTF 81A.  Joint Supporting Arms Coordination Net -- Secure VHF-FM voice nets for component forces to coordinate with CJTF concerning supporting arms for fire which impact outside of Task Force areas of operation.

JTF 82.  Naval Fire Control -- Secure or nonsecure HF-SSB voice net used to pass mission status and relief reports from the firing ships to CTF____SACC.

JTF 83.  Naval Fire Support Net -- Secure HF-SSB voice net supporting requests for fire, ship assignments, and orders pertinent to execution of fires.

JTF 84.  Naval Fire Ground Spot Net -- Secure HF-SSB voice nets between Shore Fire Control Party (SFCP) and assigned direct support gunfire ship.

JTF 84A.  Naval Fire Ground Spot Net -- Secure VHF-FM voice nets between Shore Fire Control Party (SFCP) and assigned direct support gunfire ship.

JTF 85.  Joint Link-up Net -- Secure VHF-FM voice net to coordinate rendezvous of separate elements or

the rejoining of detached elements to parent organizations (multiple discrete frequencies).

JTF 86.  Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF ____. Assignments of SFC SPOT net to the firing ship and SFC SPOT team will be made on JTF-82 by CTF _____SACC.

JTF 87.  Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF____. Assignments of SFC SPOT net to the firing ship and SFC SPOT team will be made on JTF-82 by CTF____SACC.

JTF 88.  Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF___. Assignment of SFC SPOT net to the firing ship and SFC SPOT team will be made on JTF-82 by CTF___SACC.

JTF 89.  Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF___. Assignment of SFC SPOT net to the firing ship and SFC SPOT team will be made on JTF-82 by CTF___SACC.

JTF 90.  Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF___. Assignment of SFC SPOT net to the firing ship and SFC SPOT team will

be made on JTF-82 by CTF___SACC.

JTF 91.  Combined Forces Link-up Net -- Nonsecure VHF-FM voice net to coordinate rendezvous of separate elements or the rejoining of detached elements to parent organizations (multiple discrete frequencies).

JTF 93A.  NF Airspot Control -- Secure or nonsecure UHF voice net used by airborne spotter to call and adjust fire.  Assignment of this net to an air spotter will be made over the Tactical Air Observation Net. Assignment of this net to the firing ships will be made on JTF 83, Naval Fire Support.  Only one fire mission at a time, per net, will be conducted.

JTF 93B.  NF Airspot Control -- Secure or nonsecure UHF voice net used by airborne spotter to call and adjust fire.  Assignment of this net to an air spotter will be made over the Tactical Air Observation Net. Assignment of this net to the firing ships will be made on JTF 83, Naval Fire Support.  Only one fire mission at a time, per net, will be conducted.

JTF-XXX.  JTF Net Expansion -- JTF expansion capability for additional net designators as determined by the applicable CINC or CJTF.

3.  Air Coordination Nets.

AC 1.  Joint Air Coordination Net -- Secure UHF voice net via tactical satellite linking military air control agencies

for coordination of air operations within and adjacent to the objective area.

AC 1A.  Joint Air Coordination Net -- Secure HF-SSB voice net backup to UHF Satellite net. Links military air control agencies for coordination of air operations within and adjacent to the objective area.

AC 2.  Civil Air Control Common -- Nonsecure VHF-AM voice net designated by FAA or Civil Air Route Traffic Control Center to be used by Air Force Air Traffic control functions at CTF _____ CRC/CRPs for control of civil aircraft movement in/through tactical airspace.

AC 3.  Tactical Air Traffic Control Net -- Nonsecure UHF voice net guarded by air control agencies of Navy and Marine Tactical Air Control System (TACS) for initial report by tactical aircraft in support of CTF___ units. Also used by administrative and transient aircraft to establish contact with the applicable control agency. Circuit may also be used by Air Force Forces (AFFOR) elements for TACS/COMMON initial reporting net.

AC 3A.  Tactical Air Traffic Control Net -- Nonsecure UHF voice net guarded by all Air Force radar facilities for initial reports by tactical aircraft in support of Air Forces (AFFOR) CRC/CRPs for control of civil aircraft movement in/through tactical airspace.

AC 4.  Tactical Air Direction Net -- Secure UHF voice net provides for direction of aircraft in the conduct of a close air support (CAS) mission (multiple discrete frequencies).

AC 5.  Fighter Air Direction/Combat Air Patrol/Air Defense Net -- Nonsecure UHF voice net supporting aircraft mission briefs and control of combat air patrol aircraft performing air defense alert, fighter escort, and/or threat intercept missions.

AC 8.  In-flight Report -- Nonsecure UHF voice linking tactical air control systems and aircraft.

AC 9.  UHF Airborne Relay -- Secure/Nonsecure UHF used to provide and extend point-to-point UHF voice communications between ground and surface elements.

AC 9A.  UHF Airborne Relay -- Secure/Nonsecure UHF used to provide and extend point-to-point UHF DATA (LINK) communications between ground and surface elements.

AC 10.  Joint Air Support Coordination Net -- Secure HF-SSB voice net used to coordinate immediate air support.

AC 10A.  Joint Air Support Coordination Net -- Secure VHF-FM voice net to coordinate immediate air support.

AC 11.  Link 11-- Secure HF netted TADIL A datalink.

AC 11A.  Link 11-- Secure UHF netted TADIL A datalink.

AC 12.  Link 14-- Secure HF-SSB receive-only broadcast providing air movement data.

AC 13.  TADIL B-- Normally, a Secure/Nonsecure full duplex, HF, point-to-point link that operates with continuous transmissions in both directions, utilizing serial transmission frame characteristics.

AC 14.  Interface Coordination Net (INC) -- Secure HF-SSB voice dual-function net (tactical weapon employment coordination/digital message and interface control).

AC 15.  Track Supervision Net (TSN) -- Secure or nonsecure HF-SSB voice primary, assisting units entering/exiting the interface.

AC 15A.  Track Supervision Net (TSN) -- Secure or nonsecure UHF voice backup, assisting units entering/exiting the interface.

AC 16.  Datalink Coordination Net (DCN) -- Secure or nonsecure HF-SSB voice primary used to coordinate equipment supporting TADIL operations.

AC 16A.  Datalink Coordination Net (DCN) -- Secure or nonsecure UHF voice backup used to coordinate equipment supporting TADIL operations.

AC 17.  Voice Product Net (VPN) -- Secure UHF voice net used to forward non-digital SIGINT information to other interface subscribers.

AC 17A.  SIS/Voice Product Net (SIS/VPN) -- VINSON-Secure UHF voice net used to forward non-digital SI/SIGINT information to other interface subscribers.

AC 18.  Tactical Air Request Net (TARN) -- Secure HF-SSB voice net used to request immediate air support from air control agencies.

AC 19.  Fighter Check-In Net -- Secure or nonsecure UHF voice net used to direct joint fighter type aircraft missions.

AC 19A.  Fighter Air Direction Net -- Nonsecure UHF voice net used to direct joint fighter type aircraft missions.

AC 20.  Air Traffic Control -- Nonsecure UHF voice used for air traffic control services.

AC 20A.  Air Traffic Control -- Nonsecure VHF-AM voice used for air traffic control services.

AC 23.  Tanker/Refueling/Rendezvous Operations -- Nonsecure UHF or VHF-AM voice nets for control of rendezvous and tanker/tactical aircraft in-flight refueling operations (multiple discrete frequencies).

AC 24.  Helo Direction Net -- Nonsecure UHF voice net used

to control helo assets in the JTF operating area.

AC 25.  Helo Command Net -- Secure UHF voice net linking the Tactical Air Control Center (TACC) with the Naval helo support units.

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ANNEX C to APPENDIX D

SAMPLE SPECTRUM MANAGEMENT APPENDIX

Following is a sample Appendix 4 to Annex K for JTF "X"s operations plan. This appendix could be constructed by either the CINC Joint Frequency Management Office (JFMO) or the JTF Spectrum Management Element (JSME) depending on the flow of the situation. Change JFMO/JSME to reflect issuing office as required.

APPENDIX 4 JOINT SPECTRUM MANAGEMENT TO ANNEX K COMMUNICATIONS TO "XXX"

1.(U) REFERENCES: a. Theater Spectrum Management Manual/Regulation/Instruction. (U)

b. CJCSI 3200.01, Electromagnetic Spectrum Use in Joint Military Operations (U)

c. CINC Directive 00-01, Joint Task Force Headquarters and Standing Operating Procedures (JTF HQ SOP). (U)

2.      (U) GENERAL.  This appendix provides guidance and direction for managing the spectrum to support operation JTF "X".  In order to most efficiently manage the spectrum for the number of users within the AOR and make assignments to these forces, assignment authority will be centralized. The JFMO/JSME will coordinate all requests from the forces with the nation "X" and allies.  Component spectrum managers will submit requests for frequencies, in Standard Frequency Action Format (SFAF), to the JFMO/JSME, and will be responsible for assignment and allotment of all spectrum assets once approved.

3.      (U) CONCEPT OF SUPPORT.

    a.  (U) All Phases.  Spectrum managers of the major components operating under JTF "X" will consolidate requests from subordinate units and forward these requirements to the JFMO/JSME.

    b.  (U) Automation.  The automated system used for database management will be version 2.x of the Joint Spectrum Management System for Windows (JSMS$_w$). The JCEOI will be developed using version 2.x of Revised Battlefield Communications Electronic Operating Instructions (CEOI) System (RBECS) for Joint CEOI (JCEOI) generation.  Transmission of frequency requests and assignments will be electronic mail; AUTODIN message, SIPRNET, FRRS account, PC-to-PC transfer or via diskette.

4.    (U) RESPONSIBILITIES.

   a.  (U) JFMO/JSME:

      (1)  (U) Establish JTF command policy on the use and management of the spectrum.

      (2)   (U) In accordance with J5 guidance, coordinate spectrum use with the host-nation/allied spectrum management authorities.

      (3)  (U) Serve as the senior frequency assignment coordination authority for subordinate task force units, and develop and distribute spectrum-use plans.

      (4)  (U) Provide representation to the IO CELL.

      (5)  (U) Combine inputs from all JTF staff levels and components and develop a proposed JRFL for J3 approval.

      (6)  (U) Maintain and publish J3 approved JRFL.

      (7)  (U) In conjunction with J6, and in coordination with the J3, develop, publish, promulgate, and maintain the JCEOI.

      (8)  (U) Provide administrative and technical support for spectrum use.

      (9)  (U) Maintain the common database for planning, coordinating, and controlling spectrum use.

      (10)  (U) Implement JSIR procedures IAW CJCSI 3220.02.

      (11)  (U) Evaluate, analyze, and attempt to resolve interference incidents at the lowest level possible.  (See Tab A for JSIR report format)

   b.  (U) JTF J3

      (1)  (U) Establish net structure for developing into the JCEOI.  Provide inputs to the JFMO/JSME.

      (2)  (U) Approve JRFL for publication and dissemination.

      (3)  (U) Resolve spectrum-use conflicts between users IAW commander's priorities (e.g. J2 requirement to exploit vice J6 requirement to communicate).

(4) (U) Provide frequency-input list to the IO cell for inclusion into the JRFL.

c. (U) JTF J2

(1) (U) Provide GUARDED frequency list to the IO cell for inclusion into the JRFL.

(2) (U) Assist in the resolution of interference incidents.

d. (U) Component Commands

(1) (U) Submit spectrum requirements in SFAF format to JSME. Nominate specific frequencies to be coordinated with nation "X". If coordination with nation "X" is required, each proposal must contain a releasability code in SFAF item 005.

(2) (U) Ensure users comply with their frequency assignment parameters (power, bandwidth, and location).

(3) (U) Attempt to resolve any frequency conflicts and interference incidents locally. If resolution cannot be accomplished, report to JSME for resolution.

(4) (U) Provide frequency list to the IO cell for inclusion into the JRFL.

e. (U) Deploying units

(1) (U) Submit frequency requests in SFAF format through higher headquarters to JFMO/JSME.

(2) (U) Ensure only those frequencies assigned are used and comply with parameters of the assignment, e.g., power bandwidth, and location.

(3) (U) Attempt to resolve any frequency conflict and interference incidents locally.  If unable to resolve situation, report it IAW CJCSI 3220.02, Joint Spectrum Interference Resolution.

5.    (U) FORMAT.  All frequency requests submitted will comply with SFAF as prescribed in CINC Spectrum Management Manual.  Preferably in electronic format; e-mail, autodin, or on floppy disk.  Each frequency request must be a complete stand-alone record, not an abbreviated or parted proposal (e.g., part I of IV, part three same as part one except).

6.    (U) SECURITY CLASSIFICATION.

a.  (U) Frequency requests will be classified at the lowest level possible.  If classified, each SFAF item will have a classification marking (U, C, or S) before the text.

b.  (U) Any request that requires submission through the host nation will address releasability to host nation.

For example; Confidential, Releasable to Host-Nation as Confidential.

TAB A: Electromagnetic Interference (EMI) Reporting

TAB B: JTF JCEOI Concept

TAB C: Spectrum-Use Planning

TAB A ELECTROMAGNETIC INTERFERENCE (EMI) REPORTING TO APPENDIX 4 SPECTRUM MANAGEMENT TO ANNEX K COMMUNICATIONS TO "XXX"

1.    (U) REFERENCES

    a.    (U) Theater Spectrum Management Manual/Regulation/Instruction

    b.    (U) CJCSI 3320.02, Joint Spectrum Interference Resolution Program

    c. (U) CINC Directive 00-01, Joint Task Force Headquarters and Standing Operating Procedures (JTF HQ SOP).

2.    (U) GENERAL.  This Tab to Appendix 4 provides guidance and direction for reporting interference incidents encountered during Operation JTF "X"

3.    (U) PROCEDURES

    a.  (U) Interference incidents will be reported using the enclosed format.  All reports of suspected hostile interference would be submitted via secure means.

    b.  (U) The operator/user experiencing the interference is responsible for submitting the interference report.  All interference reports submitted during this JTF Operation will be coordinated through the Component IO office before transmission

    c.  (U) Attempt to resolve interference problems at the lowest levels possible before submitting JSIR reports to higher headquarters

    d.  (U) Definitions:

        (1)  (U) Meaconing.  A system of receiving radio beacon signals and intentionally re-broadcasting them on the same frequency to confuse navigation.

        (2)  (U) Intrusion.  The intentional insertion of electromagnetic energy into transmission paths in any manner with the objective of deceiving operators or causing confusion.

(3)  (U) Jamming.  The deliberate radiation, re-radiation or reflection of electromagnetic energy to disrupt use of electronic devices, equipment, or systems.

(4)  (U) Unintentional disruptions are known as interference.

e.  (U) Interference reports are submitted at a minimum to the following addresses depending on type of report:

For Hostile Interference:

ACTION:          JSME
CINC JFMO
JIOC SAN ANTONIO TX//OWS//
INFO:            NSACSS FT GEORGE G MEADE MD//W9M//
DIA WASHINGTON DC//PGI-3A//
OTHER COMPONENT COMMANDS
THEATER CINC


Interference involving Space Systems:

ACTION:          JSME
CINC JFMO
CMOC/SCC CHEYENNE MOUNTAIN AFS CO//SCC//
INFO:            JSC ANNAPOLIS MD//OP/JSIR//
DISA ARLINGTON VA//DITF/UTTF// (Only for DSCS systems)
DISA WASHINGTON DC//333//
OTHER COMPONENT COMMANDS
THEATER CINC

Non-hostile Interference:


ACTION:          CINC JFMO
JSME/
INFO:            JSC ANNAPOLIS MD//OP/JSIR//
OTHER COMPONENT COMMANDS
THEATER CINC

    f.  (U) Reporting Format.  To the maximum extent possible, the JSIR generation capability in JSMS$_w$ will be used.  If it is not available, then submit the following as minimum.

        (1)  (U) Organization affected by EMI.  Point of contact information (POC) (Name and telephone number).  Make sure when listing a POC that individual is familiar with the problem.

        (2)   (U) Place name, latitude, and longitude where EMI occurred.

        (3)  (U) Times, dates, periods EMI occurred.  Indicate whether the duration of the interference is continuous or intermittent, the approximate repetition rate of interference, and whether the amplitude of the interference is varying or constant.  Indicate if the interference is occurring at a regular or irregular time of day.

        (4)  (U) Systems and equipment affected by the EMI.  Affected system function, name, nomenclature, manufacturer with model number, or other system description.

        (5)  (U) Allocated frequency band or authorized frequency of equipment affected.

        (6)  (U) Station and/or equipment causing the interference and the location or call sign, if known.

        (7)  (U) Allocated frequency band or authorized frequency of the station and/or equipment causing the interference, if known.

        (8)  (U) Probable cause of interference (for example, co-channel assignment, harmonics, inter-modulation, spurious products, jamming, etc.).

(9)  (U) Extent of impairment to operational capability of affected equipment. Characteristics of interference (reduced range, false targets, reduced intelligibility, data errors, etc.)

(10)  (U) Corrective measures taken to resolve or work around the interference.

(11)  (U) Effect of corrective measures.

(12)  (U) Any additional useful remarks.  Provide a clear, unstructured narrative summary on the interference and local actions that have been taken to resolve the problem.

**TAB B JTF JCEOI CONCEPT TO APPENDIX 4 SPECTRUM MANAGEMENT TO ANNEX K COMMUNICATIONS TO JTF "X"**

1.    (U) References

    a.    (U) Joint Chief Staff message DTG 182218Z OCT 93

    b.    (U) CJCSM 6230.04, Manual for Employing Revised Battlefield Electronic CEOI System (RBECS).

2.    (U) General.  This tab provides information concerning the JCEOI concept and its use during JTF "X"

3.    (U) Procedures

    a.  (U) The RBECS version 2.X will be used during JTF "X" operations, along with RBECS Merge for Windows 2.X, to create, modify, and generate the JCEOI.

    b.  (U) The JCEOI is a single, comprehensive document that contains frequencies, nets, SINCGARS information, and call signs/words for all participants.  To provide adequate lead-time for submission of frequency requirements for allied coordination and to design, publish, and distribute the JCEOI, the following relationships and milestones are established:

    c. (U) Submit all JCEOI data through component headquarters for consolidation and forwarding to the JTF "X" JSME for inclusion in JCEOI.

    d.    (U) Inputs are required from ARFOR, NAVFOR, AFFOR, MARFOR, JSOTF, and Coalition Forces Component Headquarters.

    e.    (U) The desired input method for JTF JCEOI inputs are electronic RBECS format; however, as a minimum, a paper copy of the Master Net List, Net Groups, Separation Plans are required.  Coalition forces will submit and coordinate all requirements directly to the JSME for assistance in completing RBECS input.

    f.    (U) To create the JCEOI the following information is required

(1)  (U) Identify radio nets which have a specific title; e.g., Alternate (ALT), Anti-jam (AJ), or Conduct of Fire (COF).  Radio net titles may contain a maximum of (16) characters including spaces; e.g., 29TH INF DIV ALT.  Also, identify the frequency band that radio net will operate in; e.g., HF, VHF/FM, VHF/AM, UHF, SHF, or EHF.

(2)  (U) Identify radio nets requiring a fixed frequency.

(3)  (U) Identify nets that require frequency separation.

(4)  (U) Identify nets that can be included in a share plan.

(5)  (U) Satellite net names will appear in the JCEOI but may not have frequencies due to time constraints and availability of channels.

(6)  (U) HF DCS entry frequencies.

(7)  (U) Frequencies to be included in the JRFL must be identified before final generation of JCEOI.

(8)  (U) Nets requiring restriction codes and the restriction code definitions.

g.  (U) List of all nets requiring a call sign to build the call sign vocabulary.  Daily changing alphanumeric, tri-graph (letter-number letter) call signs will be used; e.g. B3K, C9Q.  The capability to provide fixed tri-graph call signs is not available.

h.  (U) Identify all net groups to ensure their listing in the appropriate component layer of the JCEOI.

i.  (U) Lists of unit net names.  These names can contain a maximum of (16) characters including spaces, (e.g., 9th MAR TOW PLT).  Net names cannot be used more than once within your component; net names must be unique.

j.  (U) List of all nets requiring a call word in order to build the call word vocabulary includes fixed and daily changing call words.  The JSME will deconflict the call word dictionary against any fixed call words that are requested.

k.  (U) List of the suffixes that each component will use. The suffix is a two-digit number attached to a call sign or call word used to identify personnel or staff sections within a unit.  The suffix vocabulary may contain a maximum of 99 assignments.  There will be one master changing suffix vocabulary for the JCEOI.

l.  (U) List of expander titles that your unit will use.  The expander is a single letter assignment used to identify personnel within a unit.  Expander vocabulary can contain a maximum of (20) expander titles.  There will be one master changing expander vocabulary for the JCEOI.

m.  (U) Instructions for the use of changing suffixes/expanders are provided in the Quick Reference pages of the JCEOI.

n.  (U) The JCEOI when completed will be transmitted electronically to all component commanders.  Methods of transmission can include: SIPRNET e-mail, compressed file transfer over STU-III, or download from JTF "X" secure BBS. Coalition forces will be given paper copies.

o.  (U) The JTF JCEOI will be in half-page 52-line format.  The JCEOI will be generated in three (3) editions.  One active edition, one reserve edition transmitted to, but not distributed below component headquarters, and a third edition to be used in case of a compromise.

TAB C JOINT SPECTRUM-USE PLAN TO APPENDIX 4 SPECTRUM MANAGEMENT TO ANNEX K COMMUNICATIONSTO JTF "X"

1.    (U) REFERENCES

    a.      (U) Unified command regulation or Spectrum Management Manual

    b.      (U) Unified command Joint Communications-Electronics Standing Instructions (JCESI)

    c. (U) Other applicable directives or instructions, as appropriate

2.    (U) GENERAL.  This Tab describes spectrum-use plan for operation JTF "X"

3.    (U) PROCEDURES

    a.   Spectrum-Use PLAN.  Subject to any limitations noted (such as power, bandwidth, hours of operation, etc.), list the frequencies authorized for use in the exercise/operation. Sort frequency authorizations according to frequency band to facilitate reference and use.  The JCEOI frequency authorization information is also included in the JTF Frequency Plan.  Present each sort list as a TAB to this appendix (Tab E & F). Use Table below as an example.

| Freq. Band | Intended Use by military forces | Military Requirements | Conditions of Use |
|---|---|---|---|
| (a) | (b) | (c) | (d) |
| 14-70 kHz | MARITIME MOBILE | Essential military requirement for naval communications. | |
| 415 - 526.5 kHz | AERONAUTICAL RADIONAVIGATION | Military requirements for tactical non-directional beacons. | |
| | MARITIME MOBILE | Military requirements for naval communications | |
| 156 – 174 MHz | MOBILE, except Aeronautical Mobile | Military requirements for Sonobuoy operations at sea and in port. | Sonobuoy to be operated on a secondary basis. |
| | MARITIME MOBILE | Military requirements for naval communications. | To be used in accordance with RR Appendix 18. |
| 420 – 450 MHz | RADIOLOCATION Radiolocation | Military requirements for land and naval radar and airborne radar over ocean areas. | In the interference range of the territorial waters of member's countries, radar operations must be coordinated on a national basis according to the status of the services. |
| 4400 – 5000M Hz | FIXED, MOBILE | Essential military requirements for fixed, tactical radio relay and mobile systems. | 1.This is a harmonized NATO band type1. 2.This FIXED SATELLITE service will not be Implemented in NATO Europe. |

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ANNEX D TO APPENDIX D

CINC POINTS OF CONTACT AND AREA OF RESPONSIBILITY

1. The following table provides POC information for the CINC frequency management offices.

Table D-D-1.  USCINC Frequency Management Offices

| COMMAND | TELEPHONE NO. | MESSAGE ADDRESS |
|---|---|---|
| US Central Command (USCENTCOM) | COMM (813) 828-6597<br>DSN 968-6597<br>FAX (UNCLAS info) DSN 968-6659<br>FAX (SECURE info) DSN 968-5279 | USCINCCENT MACDILL AFB FL//CCJ6-CO-F// |
| US European Command (USEUCOM) | COMM 49-711-680-8523<br>DSN (314) 430-8523<br>FAX (UNCLAS) DSN 314-430-5006<br>FAX(SECURE) Call for info | USCINCEUR VAIHINGEN GE//ECJ6-DF// |
| US Special Operations Command (USSOCOM) | COMM (813) 828-4855<br>DSN 968-4855, 299-4855<br>FAX (UNCLAS info) DSN 968-3279<br>FAX (SECURE), 299-8636 | USCINCSOC MACDILL AFB FL//SOJ6-PR//<br>SOIO-C4I-OS |
| Joint Forces Command (JFCOM) | COMM (757) 444-3241<br>DSN 564-3241<br>FAX (UNCLAS) DSN 565-9267<br>FAX (SECURE info) DSN 836-5112 | JFMO LANT NORFOLK VA// |
| US Pacific Command (USPACOM) | COMM (808) 477-1051/2/4<br>DSN (STU III) (315) 477-1051/2/4 | JFMO PAC HONOLULU HI//J61// |

| | FAX (UNCLAS) (808) 477-0691<br>FAX (SECURE) (808) 477-1048 | |
|---|---|---|
| US Southern Command (USSOUTHCOM) | COMM (305) 437-1661<br>DSN 567-1661<br>FAX (UNCLAS) X-1951<br>FAX (SECURE) X-1875 | USCINCSO<br>MIAMI FL//SCJ632// |

2.  The following figure and tables are a representation of the CINC AOR's and a country listing for each AOR.
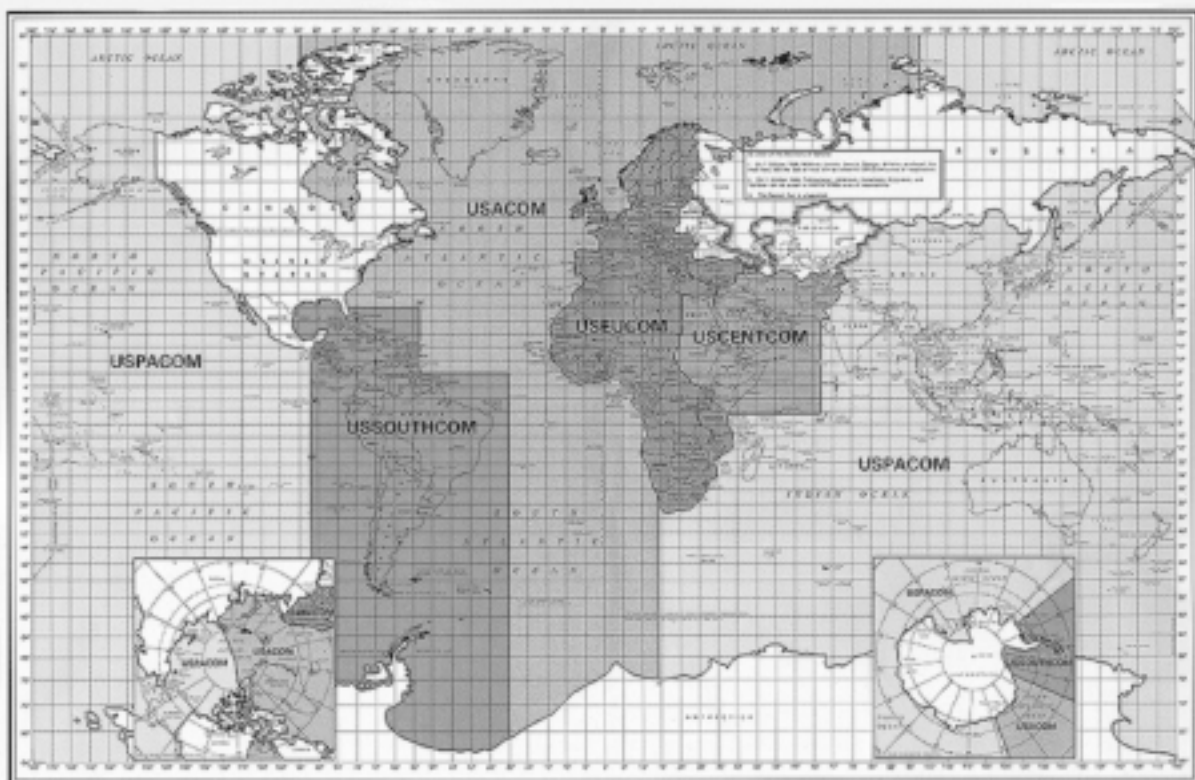


Figure D-D-1.  The World with Commanders' Areas of Responsibility.

**Table D-D-2.  County listing for USCINJFCOM**.

| ITU CODE | COUNTRY |
|----------|---------|
| ASC | Ascension Island |
| AZR | Azores |
| GRL | Greenland |
| ISL | Iceland |
| MDR | Madeira |
| SHN | Saint Helena |
| SPM | Saint Pierre and Miquelon (French Department of) |
| STP | Sao Tome and Principe (Democratic Republic of) |
| USA | The 48 contiguous States of the United States of America |
| TRC | Tristan da Cunha |

**Table D-D-3.  Country list for USCINCPAC.**

| ITU CODE | COUNTRY |
|---|---|
| ALS | Alaska |
| AUS | Australia |
| BGD | Bangladesh (People's Republic of) |
| ICO | Cocos Keeling Islands |
| COM | Comoros (Islamic Federal Republic of the) |
| CRO | Crozet Archipelago |
| DGA | Diego Garcia |
| FJI | Fiji (Republic of) |
| GUM | Guam |
| HWA | Hawaii |
| HKG | Hong Kong |
| IND | India (Republic of) |
| INS | Indonesia (Republic of) |
| J | Japan |
| JAR | Jarvis Island |
| JON | Johnston Island |
| FSM | Micronesia (Federated States of) |
| AMS | St Paul & Amsterdam Is.  and Andorra (Principality of) |
| GCC | Territories of the United Kingdom in Region 3 |
| KER | Kerguelen Islands |
| KIR | Kiribati (Republic of) |
| KOR | Korea (Republic of) |
| KRE | Korea, Democratic People's Republic of |
| LAO | Lao, People's Democratic Republic |
| MAC | Macao |
| MAU | Mauritius (Republic of) |
| MDG | Madagascar (Democratic Republic of) |
| MDW | Midway Islands |
| MHL | Marshall Islands (Republic of the) |
| MLA | Malaysia |
| MLD | Maldives (Republic of) |
| MRA | Mariana Islands (except Guam) |

| MRL | Marshall Islands |
|-----|------------------|
| MRN | Marion Island |
| MSR | Montserrat |
| MYT | Mayotte Island |
| NCL | New Caledonia |
| NFK | Norfolk Island |
| NIU | Niue Island |
| NPL | Nepal |
| NRU | Nauru (Republic of) |
| NZL | New Zealand |
| OCE | French Polynesia |
| PAQ | Easter Island (Chile) |
| PHL | Philippines (Republic of the) |
| PHX | Phoenix Islands |
| PLM | Palmyra Island (some 50 islands make up the Atoll of Palmyra) |
| PLW | Palau (Republic of) |
| PNG | Papua New Guinea |
| PTC | Pitcairn Island |
| REU | Reunion (French Department of) |
| ROD | Rodriguez |
| SEY | Seychelles (Republic of) |
| SLM | Solomon Islands |
| SMA | American Samoa |
| SMO | Western Samoa (Independent State of) |
| SNG | Singapore (Republic of) |
| SWN | Swan Islands |
| TCA | Turks and Caicos Islands |
| THA | Thailand |
| TKL | Tokelau Islands |
| TMP | East Timor Columbia |
| TUV | Tuvalu |
| VTN | Viet Nam (Socialist Republic of) |
| VUT | Vanuatu (Republic of) |
| WAK | Wake Island |
| WAL | Wallis and Futuna Islands |

Annex D
Appendix D

**Table D-D-4.  Country list for USCINCEUR**.

| ITU CODE | COUNTRY |
|---|---|
| AFS | South Africa (Republic of) |
| ALB | Albania |
| ALG | Algeria (People's Democratic Republic of) |
| AGL | Angola (Republic of) |
| AND | Andorra |
| AOE | Western Sahara |
| ARM | Armenia |
| AUT | Austria |
| AZE | Azerbaijan |
| BEL | Belgium |
| BEN | Benin (Republic of) |
| BIH | Bosnia & Herzegovina (Republic of) |
| BLR | Belarus |
| BOT | Botswana |
| BUL | Bulgaria |
| BFA | Burkina Faso |
| BDI | Burundi (Republic of) |
| CAF | Central African Republic |
| CME | Cameroon (Republic of) |
| CYP | Cypress |
| TCD | Chad (Republic of) |
| COG | Congo (Republic of the) |
| CTI | Cote d'Ivoire (Republic of) (Ivory Coast) |
| CZE | Czech Republic |
| D | Germany (Federal Republic of) |
| DNK | Denmark DOM Dominican Republic |
| G | United Kingdom of Great Britain and Northern Ireland |

| | |
|---|---|
| GNE | Equatorial Guinea (Republic of) |
| HOL | Netherlands |
| HRV | Croatia (Republic of) |
| E | Spain |
| EST | Estonia (Republic of) |
| FIN | Finland |
| F | France |
| G | United Kingdom of Great Britain and Northern Ireland |
| GAB | Gabonese Republic |
| GMB | Gambia (Republic of the) |
| GHA | Ghana |
| GNB | Guinea-Bissau (Republic of) |
| GRC | Greece |
| GUI | Guinea (Republic of) |
| HNG | Hungary (Republic of) |
| HOL | Netherlands (Kingdom of the) |
| I | Italy |
| IRL | Ireland |
| ISR | Israel (State of) |
| LIE | Liechtenstein |
| LVA | Latvia (Republic of) |
| LBN | Lebanon |
| LSO | Lesotho (Kingdom of) |
| LBR | Liberia (Republic of) |

**Table D-D-4. Country list for USCINCEUR (continued).**

| | |
|---|---|
| LBY | Libya (Socialist People's Libyan Arab Jamahiriya) |
| LTU | Lithuania (Republic of) |
| LUX | Luxembourg |
| MCO | Monaco |
| MDA | Moldova |
| MKD | The Former Yugoslav Republic of Macedonia |
| MLI | Mali (Republic of) only) |
| MLT | Malta |
| MOZ | Mozambique (Republic of) |
| MRC | Morocco (Kingdom of) |
| MTN | Mauritania (Islamic Republic of) |
| MWI | Malawi |
| NGR | Niger (Republic of the) |
| NIG | Nigeria (Federal Republic of) |
| NMB | Namibia (Republic of) |
| NOR | Norway |
| POL | Poland (Republic of) |
| POR | Portugal |
| ROU | Romania |
| RRW | Rwandese Republic |
| S | Sweden |
| SEB | Serbia |
| SEN | Senegal (Republic of) |
| SRL | Sierra Leone |
| SUI | Switzerland (Confederation of) |
| SVK | Slovak Republic |
| SVN | Slovenia (Republic of) |
| SWZ | Swaziland (Kingdom of) |
| SYR | Syrian Arab Republic |
| TGO | Togolese Republic |
| TZA | Tanzania (United Republic of) |
| TUN | Tunisia |
| TUR | Turkey |

| UGA | Uganda (Republic of) |
|-----|----------------------|
| UKR | Ukraine |
| ZAI | Zaire (Republic of) |
| ZAN | Tanzania (Zanzibar) |
| ZMB | Zambia (Republic of) |
| ZWE | Zimbabwe (Republic of) |

**Table D-D-5.  Country list for USCINCCENT.**

| ITU CODE | COUNTRY |
|---|---|
| AFG | Afghanistan |
| ARS | Saudi Arabia (Kingdom of) |
| BHR | Bahrain (State of) |
| DJI | Djibouti (Republic of) |
| EGY | Egypt (Arab Republic of) |
| ERI | Eritrea |
| ETH | Ethiopia |
| IRN | Iran (Islamic Republic of) |
| IRQ | Iraq (Republic of) |
| JOR | Jordan (Hashemite Kingdom of) |
| KAZ | Kazakhstan |
| KEN | Kenya (Republic of) |
| KGZ | Kyrgystan |
| KWT | Kuwait (State of) |
| OMA | Oman (Sultanate of) |
| PAK | Pakistan (Islamic Republic of) |
| QAT | Qatar |
| SEY | Seychelles |
| SOM | Somali Democratic Republic |
| SDN | Sudan (Republic of the) |
| TJK | Tajikistan |
| TKM | Turkmenistan |
| UAE | United Arab Emirates |
| UZB | Uzbekistan |
| YEM | Yemen |

Table D-D-6.  Country listing for USCINCSOUTH.

| ITU CODE | COUNTRY |
|---|---|
| ATG | Antigua and Barbuda |
| ARG | Argentine Republic |
| ABW | Aruba |
| BAH | Bahamas (Commonwealth of the) |
| BLZ | Belize |
| BER | Bermuda |
| B | Brazil (Federative Republic of) |
| VRG | British Virgin Islands |
| CNR | Canary Islands |
| CYM | Cayman Islands |
| CTR | Costa Rica |
| CUB | Cuba |
| DMA | Dominica (Commonwealth of) |
| EQA | Ecuador |
| SLV | El Salvador (Republic of) |
| FLK | Falkland Islands (Malvinas) |
| GRD | Grenada |
| GDL | Guadeloupe (French Department Of) |
| GTM | Guatemala (Republic of) |
| GUF | Guiana (French Department of) |
| GUY | Guyana |
| HTI | Haiti (Republic of) |
| HND | Honduras (Republic of) |
| MRT | Martinique (French Department of) |
| NCG | Nicaragua |
| PNR | Panama (Republic of) |
| PRG | Paraguay (Republic of) |
| PRU | Peru |
| PTR | Puerto Rico (including Culebra, Mona, and Vieques) |
| SCN | Saint Christopher and Nevis |
| LCA | Saint Lucia |
| VCT | St. Vincent and the Grenadines |

| SUR | Suriname (Republic of) |
|-----|------------------------|
| TRD | Trinidad and Tobago |
| VIR | United States Virgin Islands (St. Croix, St. John, St. Thomas) |
| URG | Uruguay (Eastern Republic of) |
| VEN | Venezuela (Republic of) |

ANNEX E TO APPENDIX D

SAMPLE RBECS DATA CALL MESSAGE

1.  The following is a sample AUTODIN data call message for JTF component force input into a JTF JCEOI.

FM  JTF XRAY//J6//
TO  AIG #####
BT
UNCLAS
EXER/JTF X//
MSGID/GENADMIN//

SUBJ/RBECS DATA CALL//
REF/A/CON/JTFX/970110//
RMKS/1.  PER REF A, THE FOLLOWING PROCEDURES ARE PROVIDED TO STREAMLINE THE DEVELOPMENT OF THE JTF "X" UMBRELLA JCEOI. REQUIRMENTS MUST BE SUBMITTED IN RBECS 2.x FORMAT IN RAW FORM.  THE JCEOI WILL BE A SINGLE GENERATION JCEOI AND GENERATED BY THE JSME JTF "X" ON D-5.
INPUT IS DUE NLT D-6.
MASTER NET LIST
(10 CIRCUITS
EXAMPLE:
JOINT CIRCUITS

| NAME/DESCRIPTION | NET ID | C S | O C | RESTRICTIONS | FREQ | P W | REUSE CL ZN | CALLWORD |
|---|---|---|---|---|---|---|---|---|
| JTF 19A | xxx | N | N | C | | 3 | 1 | 15 |

NOTES:  1 – TYPE "XXX" IN NET ID IF CUE/MAN FREQS ARE REQUIRED FOR SINCGARS USE UNLESS PREDESIGNATED NET ID IS USED.
        2 – THE NET NAME ALLOWS 16 CHARACTERS, ENSURE THAT NO DUPLICATES APPEAR IN YOUR COMPONENT MNL, TO AVOID JRFL CONFUSION.

3 - ENTER "Y" IN CS COLUMN IF CALL SIGN REQUIRED. ENTER "N" IN CS COLUMN IF NO CALL SIGN REQUIRED.

4 - RESTRICTION CODES ARE AS FOLLOWS:

      A – 2-6 MHz

      B – 6-10 MHz

      C – 10-18 MHz

      D – 18-29 MHz

      E – AREA RESTRICTION "BRAVO"

      F – AREA RESTRICTION "GOLF"

      G – P ARE USER DEFINEABLE RESTRICTIONS WHICH MUST BE IDENTIFIED TO THE JSME IN A SEPARATE DOCUMENT.

5-     OC IS ORGANIZATION CODE.  THE FOLLOWING OCS APPLY

      JNT NETS          OC # 1

      ARFOR            OC # 2

      NAVFOR          OC # 3

      JSOTF & MARFOR  OC # 4

      AFFOR            OC # 5

      UN & COALITION   OC # 6

6-     PW IS THE POWER FIELD. CHANGE POWER LEVEL AS REQUIRED 1-VERY HIGH POWER, 2 – HIGH POWER, 3 – MEDIUM POWER, 4 – LOW POWER.  DEFAULT IS 1.

7 – REUSE PLAN WILL BE AS REQUIRED. BE PREPARED TO IMPLEMENT COMPONENT REUSE PLAN LATER IF NECESSARY.

8 – CALLWORD FIELD ENTER A 5 OR 15 DESIGNATION UNLESS A FIXED CALLWORD IS DESIRED.  IF SO, DECONFLICT WITH THE JTF "X" CALLWORD DICTIONARY ON THE JTF "X" BBS AS FILE CALL9705.05C AND CALL970315.15C. IF BUTTON NUMBER OR COLORWORD IN THIS FIELD PLEASE SPECIFY.  ANY CALLWORDS THAT CONFLICT WILL BE REPLACED BY A RANDOMLY GENERATED CALLWORD. FIXED CALLWORDS WILL ONLY BE USED ON COVERED NETS.

2.  COMPONENTS ARE REQUIRED TO SUPPLY ALL AIR ASSETS TO THE JSME ON A SEPARATE DOCUMENT FOR CALLWORD ASSIGNMENTS

WHICH WILL BE INCLUDED IN THE ATO.  THIS IS TO INCLUDE BUT NOT LIMITED TO ROTARY WING AIRCRAFT.

3.  WHEN SUBMITTING RAW DATA ENSURE TO INCLUDE FREQUENCY SEPERATION PLANS, NET GROUPS, FREQUENCY AND CALLSIGN/CALLWORD SHARING PLANS.

4.  SMOKE/PYROTECHNIC, SUFFIX/EXPANDER SHOULD BE DEFINED, SET FOR THE THEATER, AND ASSIGNED IN THE RBECS/JACS PROGRAM.

5.  ENSURE TO INCLUDE SUFFIX AND EXPANDER LISTS, THESE WILL BE STANDARD FOR THE ENTIRE TASK FORCE.

6.  THE JSME WILL ASSIST UN AND COALITION FORCES WITH THE JCEOI DEVELOPMENT.

7.  THE ACTIVE EDITION WILL BE AVAILABLE AT D-5 ON THE JTF BBS, COORDINATE FOR SPECIAL TRANSMISSION INSTRUCTIONS.

8.  THE JSME WILL GENERATE 3 10 TIME PERIOD JCEOI'S. ONE ACTIVE FOR DISTRIBUTION TO THE TASK FORCE ON D-3.  ONE RESERVE EDITION HELD BY THE JSME AND COMPONENT LEVEL J6'S.  ONE ON THE SHELF COPY HELD BY THE JSME.

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ANNEX F TO APPENDIX D

SAMPLE JTF FREQUENCY REQUEST MESSAGE

1.  The following is a sample AUTODIN data call message to JTF component forces for SFAF requests for a JTF operation.

FM  JTF XRAY//J6//
TO  AIG #####
BT
UNCLAS
EXER/JTF X//
MSGID/GENADMIN//
SUBJ/JTF FREQUENCY REQUEST PROCEDURES//
REF/A/CON/JTFX/970110//
RMKS/1.  PER REF A, THE FOLLOWING PROCEDURES PROVIDED TO ADEQUATELY SUPPLY THE JTF WITH NEEDED SPECTRUM REQUIREMENTS.  INPUT IS DUE NLT D-30.
COMPONENT HQs WILL CONSOLIDATE AND FORWARD ALL FREQUENCY REQUESTS TO THE JSME.  FREQUENCY REQUESTS MUST BE SUBMITTED IN ACCORDANCE WITH CINC SMM.  ALL REQUESTS MUST CONTAIN THE FOLLOWING MANDATORY STANDARD ITEMS:

     005.  U (CLASSIFICATION)
     010.  N (TYPE OF ACTION)
     102.     JTFXNNNNNN (AGENCY SERIAL NUMBER)
       JOINT REQUESTS        970001 TO 971000
       ARFOR REQUESTS        971001 TO 972000
       MARFOR REQUESTS      972001 TO 973000
       AFFOR REQUESTS        973001 TO 974000
       NAVFOR REQUEST        974001 TO 975000
       JFACC REQUESTS        975001 TO 976000
     104.  JTFXJSME (ASSIGNMENT AUTHORITY)
     110.  M35.000 (FREQUENCY)
     113.  ML (STATION CLASS)
     114.  3K00J3E (EMISSION DESIGNATOR)
     115.  W35 (TRANSMIT POWER)
     140.  970701 (START DATE)

141. 979731 (STOP DATE)
144. O (RECORD INDICATOR)
200. JNTSVC (AGENCY)
201. CINC???? (UNIFIED COMMAND)
202.         AFFOR / ARFOR / NAVFOR / MARFOR   (UNIFIED
    COMMAND SERVICE).
    JTF###  JOINT NETS
    CTF###  ARFOR
    CTF###  MARFOR
    CTF###  NAVFOR
    CTF###  AFFOR
    CTF###  JSOTF
    CTF###  JFACC
    CTF###  UN/COALITION
204. COMMAND IS ARFOR, NAVFOR, MARFOR, AFFOR ETC.
(COMMAND)
206. FREQ MGR
207. OPERATING UNIT (OPERATING UNIT)
300. XXX (TRANSMITTER LOCATION STANDARDIZED
STATE/COUNTRY CODE)
301. XXXXXXX XXXXX (TRANSMITTER ANTENNA LOCATION))
303. 000000X/0000000X (TRANSMITTER
LATITUDE/LONGITUDE)
340. G,AN/TRC-170 OR C,MOT1354 (TRANSMITTER EQUIPMENT
NOMENCLATURE))
400. STATE /COUNTRY (RECEIVER ANTENNA LOCATION)
401. ANTENNA LOCATION (RECEIVER ANTENNA LOCATION)
403. 000000X0000000X (RECEIVER LATITUDE LONGITUDE)
440. G,AN/TRC-170 OR C,MOT1354 (RECEIVER EQUIPMENT
NOMENCLATURE))
502. OPERATION XXXXX (DESCRIPTION OF REQUIREMENT)
702. LOCAL CONTROL NUMBER (CONTROL/REQUEST
NUMBER)
910.         OPERATION XXXXXXX XXXXXXX (EXERCISE /
    PROJECT)

2.  THESE REQUIREMENTS WILL BE SUBMITTED ELECTRONICALLY
    IN SEPARATE VERTICAL SFAF RECORDS.  NO PARTED,
    ABBREVIATED, OR ABC METHOD (E.G. PART 2 SAME AS PART
    ONE EXCEPT) MESSAGES WILL BE ACCEPTED.
3.  ALL SATELLITE REQUESTS/ASSIGNMENTS MUST INFO JSME
    FOR ADDITION INTO THE EMB DATABASE.
4.  THE ELECTROMAGNETIC ENVIRONMENT FOR AREA, "X" IS
    LOCATED ON THE SIPRNET AT 111.111.1111.  IT IS A SPAWNED
    DATA FILE OR ON THE JTF "X" BBS NAMED "JTFEME.SPN".

APPENDIX E

JOINT RESTRICTED FREQUENCY LIST

1.  Introduction.  The JRFL is a list that operational, intelligence, and support elements use to identify the level of protection desired to various nets and frequencies.  This list must be used during EW missions planning to preclude listed frequencies from being interfered with.  It will be limited to the minimum number of frequencies necessary for friendly forces to accomplish JTF objectives.  Large, unwieldy JRFL's in the past resulted in this important document from being utilized.

2.  Definitions

Taboo.  Any frequency of such importance that it must never be deliberately jammed or interfered with by friendly forces.  This includes international distress, cease buzzer, safety and controller frequencies.  Component operations and communications elements designate and update this list.

Protected.  Friendly forces operational frequency of critical importance that jamming should be restricted unless necessary or until it is coordinated.  Component operations and communications elements designate and update this list.

Guarded.  Enemy frequencies currently being exploited for combat information and intelligence.

This list is time-oriented in that the list changes as the enemy assumes different combat postures.  These may be jammed if the IO cell determines the operational gain is greater than the information lost.  The J-2 designates and updates this list.

JRFL Production Process.  (See figure E-1).

a.  Identification.  The JRFL identification process begins at the unit level, and works upward through component service chain-of-command channels.  The JTF staff along with other forces will identify to the JSME those frequencies, which will be included in the JRFL.  Input to the JSME will be in the form of JCEOI nets, frequencies in the database, and frequencies identified by the various elements of the J-2, J-3, and J-6.  These frequencies will be identified to the IO cell for coordination.

b.  Consolidation.  These frequencies, along with any frequencies similarly identified by the component forces, are consolidated by the JSME into a JRFL.  All generated JCEOIs for the JTF will be provided to the JSME.  Included will be listing of International Taboo frequencies.  The JSME will enter all inputs into JSMSw and generate an initial JRFL list.

c.  Review and Dissemination.  This initial list is taken to the IO cell for coordination and deconfliction.  Once approval is received from the J-3, the JRFL is distributed; this is generally the responsibility of the J6.

Start → **Compile JRFL Inputs**

| Inputs | Process |
|---|---|
| Component CEOI's and Joint Layer of JCEOI | Load into CEOI Manager |
| List of JTF/J3 and Component desired PROTECTED Nets from the JCEOI | Tag CEOI Nets in JRFL Manager |
| List of JTF/J3 and Component desired PROTECTED frequencies NOT in the JCEOI | Input into the JRFL Manager |
| International TABOO Frequency data | Import into the JRFL Manager |
| Component GUARDED and TABOO exported JSMSw JRFL inputs | Import into the JRFL Manager |
| List of JTF/J2, J3, and J6; GUARDED and TABOO JRFL inputs | Input into the JRFL Manager |

JTF/J3 Approval

NO → J3 guidance on changing Inputs

YES → Distribute JRFL → End

Figure E-1. The JRFL Process.

4.  The following is a list of data fields that are needed to complete the JRFL report in JSMS$_w$.

a.  Classification:  One character indicates the security classification of the JRFL entry U=UNCLASSIFIED, C=CONFIDENTIAL, and S=SECRET).

b.  Declassification:  The declassification date for the frequencies to be protected.

c.  Unit:  Name of the unit to which the frequency is assigned.

d.  Status:  Restricted classification status (T=TABOO, G=GUARDED, and P=PROTECTED) followed by a slash (/) and two characters to indicate the level of restriction, A-Z and 1-9, with A1 being the highest level.

e.  Period:  The time-period for which the restriction will be active.  This refers to the JCEOI time-period.

f.  Start Date: The date on which the restriction will begin.

g.  End Date: The date on which the restriction will end.

h.  Start Hour: The hour on which the restriction will begin.

i.  End Hour: The hour on which the restriction will end.

j.  Agency Serial: A unique agency identifier for each frequency assignment (SFAF Item 102).

k.  Frequency:  The frequency to be restricted.

l.  Emission:  The bandwidth and emission designator of the equipment (SFAF Item 114).

m.  Power:  The transmitter power proceeded by the unit indicator (W = watts, K = kilowatts, M = megawatts, or G = gigawatts) (SFAF Item 115).

n.  Tx Lat-Long: The latitude and longitude of the transmitter location in degrees, minutes, and seconds followed by N or S for the latitude and an E or W for the longitude.

o.  Rx Lat-Long: The latitude and longitude of the receiver location in degrees, minutes, and seconds followed by N or S for the latitude and an E or W for the longitude.

p.  Equipment:  Enter the equipment name.

q.  Comments:  Enter all remarks, limitations, and comments.

### Table E-1.  Worldwide Restricted Frequency Listing

| Frequency | Use |
|---|---|
| K490 | Meteorological Navigation Warnings |
| K500 | Distress and Calling |
| K518 | Meteorological Navigation Warnings |
| K2174.5 | International Distress and Safety |
| K2182 | International Distress |
| K2187.5 | International  Distress and Safety |
| K3023 | International Search and Rescue |
| K4125 | International Distress and Safety |
| K4177.5 | International Distress and Safety |
| K4207.5 | International Distress and Safety |
| K4209.5 | Meteorological Navigation Warnings |
| K4210 | International Maritime Navigation Warnings |
| K5680 | International SAR |
| K6215 | International Distress and Safety |
| K6268 | International Distress and Safety |
| K6312 | International Distress and Safety |
| K6314 | INTL Maritime Safety |
| K8291 | International Distress and Safety |
| K8364 | International SAR/Survival Craft |
| K8376.5 | International Distress and Safety |
| K8414.5 | International Distress and Safety |
| K8416.5 | International Maritime Safety |
| K10003 | SAR Operations of Manned Space Vehicles |

K12290          International Distress and Safety

K12520          International Distress and Safety

K12577          International Distress and Safety

K12579          International Navigation Safety

K14350          SAR Amateur Resolution 640

K14993          SAR Operations of Manned Space Vehicles

K16420          International Distress and Safety

K16695          International Distress and Safety

K16804.5        International Distress and Safety

K16806.5        International Maritime Safety

K18068          SAR Amateur Resolution 640

K19680.5        International Maritime Safety

K19993          SAR Operations of Manned Space Vehicles

K22376          International Maritime Safety

K26100.5        International Maritime Safety

M121.5          International Distress/Aeronautical Emergency

M123.1          International Emergency/SAR

M156.3          International Ship/Aircraft SAR

M156.525        International Distress/Safety/

M156.65         International Safety of Navigation

M156.8          International Distress and Safety

M243            Aeronautical Emergency/Intl Distress/SAR

M406            SATELLITE EPIRB

M406.1          Satellite EPIRB

M1030           NAVAIDS

M1090        NAVAIDS

M1645.5-     Satellite S/E Distress and Safety
M1646.5

APPENDIX F

SPECTRUM MANAGEMENT CONSIDERATIONS
IN A MULTINATIONAL/COALITION ENVIRONMENT

1. <u>Introduction</u>.  Recent operations, from DESERT SHIELD/DESERT STORM to ALLIED FORCE, demonstrate the need for aligning DoD spectrum management policies and procedures with those of our allied and coalition partners.  US spectrum managers must be prepared to integrate US spectrum requirements into a coalition spectrum-use plan to support the mission. However, the development of specific procedures to support this requirement is made more difficult because of concise security guidance, differences in the level of training, different automation tools, support communication networks, and some language/terminology barriers.  The following information is provided to highlight some areas in which the US spectrum manager must be aware of when operating in a multinational/coalition environment.

2. <u>Areas of Concern</u>.  US spectrum managers must be prepared to address these issues, at a minimum, when operating in a multinational/coalition environment:

    a. <u>Security</u>:  The JTF Intelligence Officer must provide foreign disclosure guidelines early enough in the operational planning phases to facilitate the flow of information.  The following are some specific items to consider:

        (1)     Frequency assignment databases – ensure the appropriate special handling code is entered in SFAF item 005.

        (2) JF-12's – some equipment information may not be releasable to all countries involved in an operation.  Each JF-12 should be scrutinized to determine which countries enjoy foreign disclosure authority.  If the JF-12 data cannot be released to all the countries then that information should not be entered into the proposal/assignment that is being coded into the releasable portion of the database.

        (3) Communications Networks – Due to the different communication networks that can be used to support coalition/allied operations, network security and releasability issues need to be addressed with local Security and Intelligence Officers at the earliest point possible to facilitate the flow of information between coalition/allied and US spectrum management functions. If an unclassified network is used, OPSEC must be addressed to determine what information can or cannot be released.

    b. <u>Personnel</u> – Allied/coalition spectrum managers may not be trained to the same standards as US spectrum managers.  They have different

automation capabilities, different responsibilities, and different national requirements.  A US spectrum manager could expect to find they are the most experienced (according to US standards) and the lowest ranking person in the spectrum management cell.  The US spectrum manager can be expected to lead the overall database management effort and provide training to their allied counterparts on the US automation tools used.

   c.  Automation Tools:

      (1) JSMSw – This software tool is the Joint standard in the DoD for maintaining the tactical frequency assignment database for contingency operations and today is readily accepted in most areas in which the US maintains a presence.  The difficulties the US spectrum manager encounters exist due to the releasability of the software.  Currently JSMSw is not releasable to any single country that has not purchased the software through the US governments Foreign Military Sales program.  In other words, a US spectrum manager cannot arbitrarily release the software to non-US nationals.  The spectrum manager should be able to obtain guidance from the CINC.  Data standardization is very important when analyzing information contained in the JSMSw database.  US spectrum managers should refer to US Military Communications-Electronics Board (MCEB) Publication 7, CINC publications, instructions, and JTF written procedures for specific guidance on frequency proposal formatting.  Spectrum XXI will replace both JSMSw and the DCF upon successful fielding.  Spectrum XXI Version 1.0 will include the functionality currently existing in the Joint Spectrum Management System (JSMSw), Version 3.01, and the Frequency Resource Record System (FRRS) Distributed Computing Facility (DCF), Version 12.


      (2) RBECS – This software tool also a Joint standard in the Department of Defense, is used to develop and manage the Joint Communications-Electronics Operations Instruction (JCEOI).  Most coalition countries do not have RBECS; therefore, the US spectrum manager can expect to receive JCEOI inputs in various forms.  They must then manually input the coalition requirements before generation of the JCEOI.  The Joint Automated CEOI System (JACS) is the next generation of RBECS.  JACS will provide a common tool which will interface between spectrum managers and communication planners allowing for automated transfer of information that is easily understood by both parties.


   d.  Coordination

      (1) Information Operations - The requirement for information superiority in the Battlespace has increased the importance of management of spectrum use.  Information operations (IO) encompass the means for the JTF commander

to achieve information superiority.  The US spectrum manager must ensure the appropriate contacts within the Intelligence, Operations, and Communications branches of the coalition task force are coordinating information relevant to the IO effort.  Information such as targeting data (location), offensive and defensive weapons requirements, etc should have a direct effect on the Joint Restricted Frequency List (JRFL).  It is imperative the spectrum manager be made aware of all spectrum usage within the AOR for a successful IO campaign.

(2) Frequency Assignment Authority - Identification of the frequency assignment authority must be made early in the planning process.  This initiates decisions, which enables the development of essential processes.  The resulting procedures would then be incorporated into the specific OPLAN and corresponding annexes.

3.  Conclusion.  Military operations outside the US&P and its possessions can present a variety of challenges and sometimes-unique situations relative to spectrum management.  The US spectrum manager must be flexible and be able to take the lead in a coalition/allied spectrum management function.  Operations involving the forces of other nations increase the difficulty of maintaining an electromagnetically compatible environment.  Resolving the issues mentioned in this chapter early on would greatly aid the spectrum managers in accomplishing their tasks to support mission goals.

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APPENDIX G

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GLOSSARY

PART 1--ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AADC | Area Air Defense Commander |
| AC | Airspace Control |
| ACC | Air Combat Command (Air Force) |
| ACP | Allied Communications Publication |
| ADVON | Advanced Echelon |
| AFFOR | Air Force Forces |
| AFSAT | Armed forces satellite |
| AM | Amplitude Modulation |
| AMC | Army Materiel Command; Air Mobility Command (Air Force) |
| AO | Area of operations |
| AOC | Air Operations Center |
| AOI | Area of Influence |
| AOR | Area of Responsibility |
| ARFOR | Army Forces |
| ATO | Air Tasking Order |
| AUTODIN | Automatic Digital Information Network |
| BEI | Background Environmental Information |
| C2 | Command and Control |
| C3 | Command, Control, and Communications |
| C4 | Command, Control, Communications and Computers |
| C4I | Command, Control, Communications, Computers, and Intelligence |
| CAP | Crisis Action Planning |
| CAS | Close Air Support |
| CAT | Crisis Action Team |
| CCF | Central Computer Facility |
| C-E | Communications-Electronics |
| CEOI | Communications-Electronics Operation Instructions |
| CINC | Commander of a combatant command; commander in Chief |
| CINCJFOR | Commander in Chief, Joint Forces Command |
| CJCS | Chairman of the Joint Chiefs of Staff |
| CJTF | Commander, Joint Task Force |

| | |
|---|---|
| COA | Course of Action |
| COCOM | Combatant Command (command authority) |
| COMARFOR | Commander, Army Forces |
| COMINT | Communications intelligence |
| COMMARFOR | Commander, Marine Forces |
| COMUSFOR | Commander, United States Forces |
| CONOPS | Concept of Operation |
| CONPLAN | Operation Plan in Concept format, Contingency Plan |
| CONUS | Continental United States |
| CPU | Central Processing Unit |
| CPX | Command Post Exercises |
| DCF | Distributed Computer Facility |
| DCS | Defense Communications System |
| DISA | Defense Information Systems Agency |
| DTD | Data Transfer Device |
| DTED | Digital Terrain Elevation Data |
| ELINT | Electronics Intelligence |
| E3 | Electromagnetic Environmental Effects |
| EMB | Electromagnetic Battlespace |
| EMC | Electromagnetic Compatibility |
| EMI | Electromagnetic Interference |
| EOB | Electronic Order of Battle |
| EW | Electronic Warfare |
| EWO | Electronic Warfare Operations |
| FAX | Facsimile |
| FRRS | Frequency Resource Records System |
| FTX | Field Training Exercises |
| GB | Gigabyte |
| GMF | Government Master File; Ground Mobile Force |
| HQ | Headquarters |
| IFL | International Frequency List |
| IO | Information Operations |
| ITU | International Telecommunication Union |
| JCCC | Joint Communications Control Center |
| JCEOI | Joint Communications-Electronics Operation Instructions |
| JCESI | Joint Communications-Electronics Standing Instructions |

| | |
|---|---|
| JCS | Joint Chiefs of Staff |
| JCSE | Joint Communications Support Element |
| JFACC | Joint Forces Air Component Commander |
| JFC | Joint Force Commander |
| JFLCC | Joint Forces Landing Component Command |
| JFMCC | Joint Forces Maritime Component Command |
| JFMO | Joint Frequency Management Office |
| JOPES | Joint Operation Planning and Execution System |
| JOIC | Joint Information Operation Center |
| JRFL | Joint Restricted Frequency List |
| JSC | Joint Spectrum Center |
| JSIR | Joint Spectrum Interference Resolution |
| JSME | JTF Spectrum Management Element |
| JSMS$_w$ | Joint Spectrum Management System for Windows |
| JSOTF | Joint Special Operations Task Force |
| JSPS | Joint Strategic Planning System |
| JTF | Joint Task Force |
| JULL | Joint Universal Lessons Learned |
| JWICS | Joint Worldwide Intelligence Communication System |
| MARFOR | Marine Corps Forces |
| MB | megabyte |
| MCEB | Military Communications-Electronics Board |
| MHz | Megahertz |
| MOOTW | Military Operations Other Than War |
| MSE | Mobile Subscriber Equipment |
| MUES | Management and Use of Electromagnetic Spectrum |
| NATO | North Atlantic Treaty Organization |
| NAVFOR | Navy Forces |
| NCA | National Command Authorities |
| NEO | Noncombatant Evacuation Operation |
| NIMA | National Imagery and Mapping Agency |
| NPT | Network Planning Terminal |
| NSA | National Security Agency |
| NTIA | National Telecommunications and Information Administration |
| OPCON | Operational Control |
| OPLAN | Operations Plan |

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|---|---|
| OPORD | Operation Order |
| OPSEC | Operations Security |
| OUS&P | Outside United States and Possessions |
| PC | Personal Computer |
| PSYOP | Psychological Operations |
| RBECS | Revised Battlefield Electronic CEOI System |
| RF | Radio Frequency |
| SATCOM | Satellite Communications |
| SCIF | Special Compartment Information Facility |
| SFAF | Standard Frequency Action Format |
| SIGINT | Signal Intelligence |
| SINCGARS | Single Channel Ground and Airborne Radio System |
| SOF | Special Operations Forces |
| SOFA | Status of Forces Agreement |
| SSB | Single Sideband |
| SSN | Sunspot Number |
| TACON | Tactical Control |
| TARN | Tactical Air Request Net |
| TF | Task Force |
| TRANSEC | Transmission Security |
| TSK | Transmission Security Key |
| TTY bdcst | Teletype Broadcast |
| UHF | Ultrahigh Frequency |
| UN | United Nations |
| US&P | United States and its Possessions |
| USCINCCENT | Commander in Chief, United States Central Command |
| USCINCEUR | United States Commander in Chief, Europe |
| USCINCJFCOM | Commander in Chief, United States Joint Forces Command |
| USCINCPAC | Commander in Chief, United States Pacific Command |
| USCINCSOC | Commander in Chief, United States Special Operations Command |
| USCINCSOUTH | Commander in Chief, United States Southern Command |
| USCINCSPACE | Commander in Chief, United States Space Command |
| USCINCTRANS | Commander in Chief, United States Transportation Command |
| USMTF | United States Message Text Format |
| WOTL | Worldwide topographic loader |

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PART II--DEFINITIONS

Alert Order (CJCS).  1. A crisis action planning directive from the Secretary of Defense, issued by the Chairman of the Joint Chiefs of Staff, that provides essential guidance for planning and directs the initiation of execution planning for the selected course of action authorized by the Secretary of Defense.  2.  A planning directive that provides essential planning guidance and directs the initiation of execution planning after the directing authority approves a military course of action.  An alert order does not authorize execution of the approved course of action.  (JCS Pub 1-02)

Allocation (of a frequency band).  Entry in a table of frequency allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radio communications services or the radio astronomy service under specified conditions.  This term shall also be applied to the frequency band concerned (from ITU RR).

Area of Influence (AOI).  A geographic area wherein a commander is directly capable of influencing operations by maneuver or fire support systems normally under the commanders' command or control.  (Joint Pub 1-02)

Area of Responsibility (AOR).  1.  The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations.  2.  In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation.  (Joint Pub 1-02).

Assignment.  (of a radio frequency or radio frequency channel) Authorization given by an authority for a radio station to use a radio frequency or radio frequency channel under specific conditions (from ITU RR).

Background Environmental Information (BEI).  The combination of civilian electromagnetic communications infrastructure and the natural phenomena within an AOR.

Channeling Plan.  The plan by which frequencies within a band are to be assigned.

Combatant Command. A unified or specified command with a broad continuing mission under a single commander established and so designated by the president, through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff.  Combatant commands typically have geographic or functional responsibilities.  (Joint Pub 1-02).

Combatant Command (command authority).  Nontransferable command authority established by title 10 United States Code, section 164, exercised only by commanders of unified or specified combatant commands.  Combatant Command (command authority) is the authority of a combatant commander to perform those functions of command over assigned forces, involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command.  Combatant Command (command authority) should be exercised through the commanders of subordinate organizations; normally this authority is exercised through the Service component commander.  Combatant Command (command authority) provides full authority to organize and employ commands and forces that the CINC considers necessary to accomplish assigned missions. Also called COCOM (Joint Pub 1-02).

Combatant Commander.  A commander in chief of one of the unified or specified commands established by the President.  (Joint Pub 1-02)

Command And Control Warfare.  The integrated use of operations security (OPSEC), military deception, psychological operations (PSYOP), electronic warfare (EW), and physical destruction, mutually supported by intelligence, to deny information to, influence, degrade, or destroy adversary command and control capabilities, while protecting friendly command and control capabilities against such actions.  Command and control warfare is an

application of information operations in military operations.  Also called C2W.  C2W is both offensive and defensive:

a. <u>C2-attack.</u>  Prevent effective C2 of adversary forces by denying information to, influencing, degrading or destroying the adversary C2 system.  (Joint Pub 1-02)

b.  <u>C2-protection.</u>  To maintain effective command and control of own forces by turning to friendly advantage or negating adversary efforts to deny information to, influence, degrade or destroy the friendly C2 system.  (Joint Pub 1-02)

<u>Contingency Planning.</u>  The development of plans for potential crises involving military requirements that can reasonably be expected in an area of responsibility.  Contingency planning is normally conducted during peacetime, but may be performed under crisis action conditions. Contingency planning for joint operations is coordinated at the national level by assigning planning tasks and relationships among the combatant commanders and apportioning or allocating to them the forces and resources available to accomplish those tasks.  Commanders throughout the unified chain of command may task their staffs and subordinate commands with additional contingency planning tasks beyond those specified at the national level to provide broader contingency coverage.

<u>Crisis.</u>  An incident or situation involving a threat to the United States, its territories, citizens, military forces, or vital interests, that develops rapidly and that creates a condition of such diplomatic, economic, political, or military importance that commitment of U.S. military forces and resources is contemplated to achieve national objectives.  (Joint Pub 1-02)

<u>Crisis Action Planning (CAP).</u>  1.  The Joint Operation Planning and Execution System process involves the time-sensitive development of joint operation plans and orders in response to an imminent crisis.  Crisis action planning follows prescribed procedures to formulate and implement an effective response within the timeframe permitted by the crisis.  2. The time-sensitive planning for the deployment, employment, and sustainment of assigned and allocated forces and resources that occurs in response to a situation that may result in actual military operations.  Crisis action

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planners base their plan on the circumstances that exist at the time planning occurs.  (Joint Pub 1-02)

Deconfliction.  A systematic management procedure to coordinate the use of the electromagnetic spectrum for operations, communications, and intelligence functions.  It is an element of electromagnetic spectrum management.

Deliberate Planning.  The Joint Operation Planning and Execution System (JOPES) process involving the development of joint operation plans for contingencies identified in joint strategic planning documents.  Conducted principally in peacetime, deliberate planning is accomplished in prescribed cycles that complement other Department of Defense planning cycles and in accordance with formally established Joint Strategic Planning System (JSPS) procedures. 2.  A planning process for the deployment and employment of apportioned forces and resources that occurs in response to a hypothetical situation.  Deliberate planners rely heavily on assumptions regarding the circumstances that will exist when the plan is executed. (Joint Pub 1-02)

Deployment Database.  The Joint Operation Planning and Execution System (JOPES) database contains the necessary information on forces, materiel, and filler and replacement personnel movement requirements to support execution.  The database reflects information contained in the refined time-phased force and deployment data (TPFDD), from the deliberate planning process or data developed during the various phases of the crisis action process, and the movement schedules or tables developed by the transportation component commands to support the deployment of required forces, personnel, and materiel.  (Joint Pub 1-02)

Deployment Planning.  Operational planning directed toward the movement of forces and sustainment resources from their original locations to a specific operational area for conducting the joint operations contemplated  in a given plan  Encompasses all activities from origin or home station through destination, specifically including intracontinental United States , inter-theater, and intra-theater movement legs, staging areas, and holding areas.

Electromagnetic Battlespace (EMB). The electromagnetic Battlespace includes: background environmental information (BEI); the hostile (red), friendly (blue), UN, host nation, and coalition (gray) forces electromagnetic order of battle (EOB), within the JFC's AOR and area of influence (AOI).

Electromagnetic Compatibility (EMC). The ability of systems, equipment, and devices that utilize the electromagnetic spectrum to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. It involves the application of sound electromagnetic spectrum management; system, equipment, and device design configuration that ensures interference-free operation; and clear concepts and doctrines that maximize operational effectiveness. (Joint Pub 1-02)

Electromagnetic Environment (EME). The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels that may be encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment. It is the sum of electromagnetic interference; electromagnetic pulse; hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightening and p-static. (Joint Pub 1-02)

Electromagnetic Environmental Effects (E3). The impact of the electromagnetic environment upon the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including electromagnetic compatibility; electromagnetic interference; electromagnetic vulnerability; electromagnetic pulse; electronic protection, hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightning and p-static. (Joint Pub 1-02)
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Electromagnetic Interference (EMI). Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective

performance of electronics/electrical equipment.  It can be induced intentionally, as in some forms of electronic warfare, or unintentionally, because of spurious emissions and responses, intermodulation products, and the like.  (Joint Pub 1-02)

Electronic Attack (EA).  The division of EW involving the use of electromagnetic or directed energy to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability.  It includes: (1) actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum such as jamming and electromagnetic deception and (2) employment of weapons that use either electromagnetic or directed energy as their primary destructive mechanism (lasers, RF weapons, particle beams).

Electronic Warfare (EW).  Any military action involving the use of electromagnetic energy and directed energy to control the electromagnetic spectrum or to attack the enemy (EW). The three major subdivisions within electronic warfare are:

　　a.  Electronic attack (EA) That division of EW involving the use of electromagnetic, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. EA includes: (1) actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum such as jamming and electromagnetic deception and (2) employment of weapons that use either electromagnetic or directed energy as their primary destructive mechanism (lasers, RF weapons, particle beams).

　　b.  Electronic protection (EP) That division of involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability.

c.  Electronic warfare support (ES) That division of electronic warfare involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition.  Thus, electronic warfare support provides information required for immediate decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing.  Electronic warfare support data can be used to produce signal intelligence (SIGINT), both communications intelligence (COMINT), and electronic intelligence (ELINT).  (Joint Pub 1-02)

Employment Planning. Planning that prescribes how to apply force/forces to attain specified military objectives.  Employment planning concepts are developed by combatant commanders through their component commanders. (Joint Pub 1-02)

Essential Elements of Friendly Information (EEFI). Key questions likely to be asked by adversary officials and intelligence systems about specific friendly intentions, capabilities, and activities, so they can obtain answers critical to their operational effectiveness.  (Joint Pub 1-02)

Execution Planning. The phase of the Joint Operation Planning and Execution System crisis action planning process that provides for the translation of an approved course of action into an executable plan of action through the preparation of a complete operation plan or operation order. Execution planning is detailed planning for the commitment of specified forces and resources.  During crisis action planning, an approved operation plan or other National Command Authorities-approved course of action is adjusted, refined, and translated into an operation order.  Execution planning can proceed based on prior deliberate planning, or it can take place in the absence of prior planning. (Joint Pub 1-02)

Force Module(s).  A grouping of combat, combat support, and combat service support forces, with their accompanying supplies and the required non-unit re-supply and personnel necessary to sustain forces for a minimum of 30

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days.  The elements of force modules are linked together or uniquely identified so they can be extracted from or adjusted as an entity in the Joint Operation Planning and Execution System data bases to enhance flexibility and usefulness of the operation plan during a crisis.  (Joint Pub 1-02)

14 Point Format.  The U.S. European and Central Command's frequency action message format, for frequency assignments.

Guarded Frequency (s).  Enemy frequencies that are currently being exploited for combat information and intelligence.  A guarded frequency is time-oriented in that the list changes as the enemy assumes different combat postures.

Host Nation Support.  Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, times of crisis/emergencies, or war based upon agreements mutually concluded between nations.  (Joint Pub 1-02)

Information Operations.  Action taken to affect adversary information and information systems while defending ones own information and information systems.  (JCS Pub 1-02)

Joint Force Commander.  A general term applied to a commander authorized to exercise Combatant Command (command authority) or operational control over a joint force.  Also called JFC.

Joint Operation Planning. Planning for contingencies which can reasonably be anticipated in an area of responsibility or joint operations area of the command.  Planning activities exclusively associated with the preparation of operation plans, operation plans in concept format, and operation orders (other than the SIOP) for the conduct of military operations in hostile environments by the combatant commanders in response to requirements established by the Chairman of the Joint Chiefs of Staff.  Joint operation planning is coordinated at the national level to support Secretary of Defense contingency Planning Guidance, strategic requirements in the National Military Strategy, and emerging crises.  As such, joint operation planning includes mobilization planning, deployment planning, employment planning, sustainment planning, and redeployment planning procedures.  Joint

operation planning is performed in accordance with formally established planning and execution procedures. (Joint Pub 1-02)

Joint Operation Planning and Execution System (JOPES).  A continuously evolving system that is being developed through the integration and enhancement of earlier planning and execution systems: Joint Operation Planning System (JOPS), and Joint Deployment System (JDS).  It provides the foundation for conventional command and control by national- and theater-level commanders and their staffs.  It is designed to satisfy their information needs when conducting joint planning and operations.  JOPES includes joint operations planning policies, procedures, and reporting structures supported by communications and automated data processing systems.  JOPES, used to monitor, plan, and execute mobilization, deployment, employment, and sustainment activities associated with joint operations.  (Joint Pub 1-02)

Joint Restricted Frequency List.  A list of PROTECTED, GUARDED, or TABOO frequencies promulgated by a CINC or JTF commander in order to protect critical friendly frequencies or nets from friendly EW.  Also called JRFL.

Joint Special Operations Task Force (JSOTF).  A joint task force composed of special operations units from more than one Service and formed to carry out a specific special operation or prosecute special operations in support of a theater campaign or other operations.  The joint special operations task force may have conventional non-special operations units assigned or attached to support the conduct of specific missions.  (Joint Pub 1-02)

Joint Task Force (JTF). A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a sub-unified commander, or an existing joint task force commander. (Joint Pub 1-02).


Operational Control (OPCON). Transferable command authority which may be exercised by commanders at any echelon at or below the level of combatant command.  Operational control is inherent in combatant command (command authority). Operational control may be delegated and is

the authority to perform those functions of command over subordinate forces involving organizing, and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control consider necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unity training. (Joint Pub 1-02)

Protected Frequency (s). Friendly frequencies used for a particular operation, identified, and protected to prevent inadvertent jamming while active EW operations are directed against hostile forces. These frequencies are of such critical importance that jamming should be restricted unless necessary or after coordination with the user.

Redeployment. The transfer of a unit, an individual, or supplies deployed in one area to another area, or location within the area, or to the zone of interior for the purpose of further employment. (Joint Pub 1-02)

Service Component Command. A command consisting of the Service component commander and all those Service forces, such as individuals, units, detachments, organizations, and installations under the command, including the support forces that have been assigned to a combatant command, or further assigned to a subordinate unified command or joint task force. (Joint Pub 1-02)

Specified Command. A command that has a broad continuing mission and that is established and so designated by the President through the Secretary of Defense with the advice and assistance of the Chairman of the Joint Chiefs of Staff. It normally is composed of forces from but a single Military Department. (Joint Pub 1-02)

Spectrum Management. Planning, coordinating, and managing joint use of the electromagnetic spectrum through operational, engineering, and administrative procedures, with the objective of enabling electronic systems to perform their functions in the intended environment without causing or suffering unacceptable interference.  (Joint Pub 1-02)

subordinate command.  A command consisting of the commander and all those individuals, units, detachments, organizations, or installations that have been placed under the command by the authority establishing the subordinate command. (Joint Pub 1-02)

Supported Commander.  The commander having primary responsibility for all aspects of a task assigned by the Joint Strategic Capabilities Plan (JSCP) or other joint operation planning authority.  In the context of joint operation planning, this term refers to the commander who prepares operation plans or orders in response to requirements of the Chairman of the Joint Chiefs of Staff.  (Joint Pub 1-02)

Taboo Frequency (s).  Any friendly frequency of such importance that it must never be deliberately jammed or interfered with by friendly forces.  Normally these frequencies include international distress, stop buzzer, safety and controller frequencies.  These frequencies are generally longstanding. However, they may be time-oriented in that, as the combat or exercise situation changes, the restriction may be removed.

Time-Phased Force and Deployment Data (TPFDD).  The Joint Operation Planning and Execution System data base portion of an operation plan; it contains time-phased force data, non-unit-related cargo and personnel data, and movement data from the operation plan, including:

    a.  In-place units.

    b.  Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation.

    c.  Routing of forces to be deployed.

d.  Movement data associated with deploying forces.

e.  Estimates of non-unit-related cargo and personnel movements to be conducted concurrently with the deployment of forces.

f.  Estimate of transportation requirements that must be fulfilled by common-user lift resources concurrently with the deployment of forces.

g.  Estimate of transportation requirements that must be fulfilled by common-user lift resources concurrently with the deployment of forces as well as those requirements that can be fulfilled by assigned or attached transportation resources. (Joint Pub 1-02)

Time-Phased Force and Deployment List (TPFDL).  Appendix 1 to Annex A of the operation plan.  It identifies types and/or actual units required to support the operation plan and indicated origin and ports of debarkation or ocean area.  It may also be generated as a computer listing from the time-phased force and deployment data. (Joint Pub 1-02)

Unified Command.  A command with a broad and continuing mission under a single commander and composed of significant assigned components of two or more Military Departments, and which is established and so designated by the President, through the Secretary of Defense, with the advice and assistance of the Chairman of the Joint Chiefs of Staff, or, when so authorized by a commander of an existing unified command established by the President.  (Joint Pub 1-02)

Warning Order . 1.  A preliminary notice of an order or action which is to follow. (DOD) 2.  A crisis action planning directive issued by the Chairman of the Joint Chiefs of Staff that initiates the development and evaluation of courses of action by a supported commander and that requests that a commander's estimate be submitted. 3.  A planning directive that describes the situation, allocates forces and resources, establishes command relationships, provides other initial planning guidance, and initiates subordinate unit mission planning.  (Joint Pub 1-02)

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